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SUPERSTARS

THE DYNAMICS OF FIRMS, SECTORS, AND CITIES LEADING THE GLOBAL ECONOMY

DISCUSSION PAPER
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SUMMARY

SUPERSTARS: THE DYNAMICS OF FIRMS, SECTORS, AND CITIES LEADING THE GLOBAL ECONOMY

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There is much discussion about "superstar" firms and "superstar effects" in reaction to the rapid growth of very large global companies. This has been accompanied by a growing body of research examining various aspects and drivers of superstar effects in the economy. Yet questions remain and much of the evidence is still inconclusive as well as incomplete. Our research in this paper aims to fill some of the empirical and data gaps, take a global perspective and examine the issue beyond just firms. We assess the extent to which a superstar effect can be observed in the global economy in three arenas—firms, sectors, and cities—and the dynamics, including churn and changing characteristics, in each of these arenas. We also examine what characteristics, similarities, differences, and linkages can be observed across firms, sectors, and cities and what economic effects and questions this raises for further research. At the same time, we draw some preliminary implications for leaders.

Though a variety of definitions exist, we define superstar to mean a firm, sector, or city that has a substantially greater share of income than peers and is pulling away from those peers over time. For firms, our metric is economic profit, a measure of a firm's invested capital times its return above the cost of capital. We focus on economic profit rather than revenue size, market share, or productivity growth because these other metrics risk including firms that are simply large and may not create economic value. For sectors, our metric includes gross value added and gross operating surplus accruing to various types of activities (such as production, sales, and services) that cut across business establishments such as factories, laboratories, and retail stores. For cities, our metric includes GDP and personal income per capita. These measures allow us to discover which economic activities are becoming more valuable over time, where the benefits flow, and what linkages exist, if any, among sector activities and superstar firms and cities.

In our research so far we find the following:

- Superstars exist not only among firms but among sectors and cities as well, although we find the trend most evident among cities and firms. Relative to their peers, superstars share several common characteristics. In addition to capturing a greater share of income and pulling away from their peers, superstars exhibit relatively higher levels of digitization;

greater skilled labor and innovation intensity; more connections to global flows of trade, finance, and services; and more intangible assets than peers. Yet there are some variations. We find a higher churn rate among superstar firms compared with cities, indicating higher levels of persistence among superstar cities.

- For firms, we analyze nearly 6,000 of the world's largest public and private firms, each with annual revenues greater than $1 billion, that together make up 65 percent of global corporate pretax earnings. In this group, economic profit is distributed along a power curve, with the top 10 percent of firms capturing 80 percent of economic profit among companies with annual revenues greater than $1 billion. We label companies in this top 10 percent as superstar firms. The middle 60 percent of firms record near-zero economic profit in aggregate, while the bottom 10 percent destroys as much value as the top 10 percent creates. The top 1 percent by economic profit, the highest economic-value-creating firms in our sample, account for 36 percent of all economic profit for companies with annual revenues greater than $1 billion.

- Over the past 20 years, the gap has widened between superstar firms and median firms, and also between the bottom 10 percent and median firms. Today's superstar firms have 1.6 times more economic profit on average than superstar firms 20 years ago. Today's bottom-decile firms have 1.5 times more economic loss on average than their counterparts 20 years ago, with one-fifth of them (a growing share) unable to generate enough pretax earnings to sustain interest payments on their debt. The growth of economic profit at the top end of the distribution is thus mirrored at the bottom end by growing and increasingly persistent economic losses, suggesting that in addition to firm-specific dynamics, a broader macroeconomic dynamic may be at work.

- Superstar firms continue to be displaced from the top 10 percent and the top 1 percent. Indeed, some firms have risen from the bottom 10 percent to higher deciles, a few all the way to the top 10 percent. In each of the past two decades (corresponding to a business cycle), nearly 50 percent of all superstar firms fell out of the top 10 percent during the business cycle and when they fell, 40 percent fell to the bottom 10 percent. The top 1 percent is also contestable, with two-thirds being new entrants to this top rank in the last cycle. There is also some variation by sector and geography. Superstar firms from emerging economies, for instance, have a higher churn rate of 60 percent compared with 40 percent for firms from developed economies. Overall, after adjusting for the growth of M&A activity since the 1990s, we find no evidence of an economy-wide reduction in churn over time; in other words, contestability has remained about the same.

- Superstar firms are diverse and getting more so over time. They come from all sectors and regions and include global banks and manufacturing companies, long-standing Western consumer brands, and fast-growing US and Chinese tech firms. The sector and geographic diversity of firms in the top 10 percent and the top 1 percent by economic profit is greater today than 20 years ago. The 575 superstar firms in our analysis exhibit widely acknowledged markers of successful firms: they include 315 of the world's 500 largest firms by market capitalization, 230 of the world's 500 most valuable brands, 188 of the world's 500 best employers (as rated by their employees), and 53 of the world's 100 most innovative companies.

- For sectors, we analyze 24 sectors of the global economy that encompass all private-sector business establishments. We find that 70 percent of gains in gross value added and gross operating surplus have accrued to establishments in just a handful of sectors over the past 20 years. This is in contrast to previous decades, in which gains were spread over a wider range of sectors. While the superstar effect is not as strong for sectors as it is for firms, what we have identified as superstar sectors over the past

20 years include financial services, professional services, real estate, and two smaller (in gross value-added and gross operating-surplus terms) but rapidly gaining sectors: pharmaceuticals and medical products, and internet, media, and software.

- The shift in global surplus to today's superstar sectors amounted to nearly $3 trillion in 2017 alone across the G-20 countries. As today's superstar sectors have gained share of gross value added and gross operating surplus globally, other sectors such as infrastructure, consumer goods, and capital goods have lost share. In addition to global superstar sectors, we also identify regional superstar sectors where the dynamics are more localized: for example, regional superstar sectors include automobile and machinery production in China, Germany, Japan, and Korea; construction in China, India, and the United States; hospitality services in France, Italy, and the United Kingdom; and recently, natural resource production in the United States and Canada.

- Today's superstar sectors share one or more of the following attributes: fewer fixed capital and labor inputs, more intangible inputs, and higher levels of digital adoption and regulatory oversight than other sectors. With the exception of real estate, superstar sectors are two to three times more skill-intensive than sectors declining in share of income in the G-20 countries. In addition, superstar sectors tend to have relatively higher R&D intensity and lower capital and labor intensity than other sectors. The higher returns in superstar sectors accrue more to corporate surplus rather than labor, flowing to intangible capital such as software, patents, and brands. Though some superstar sectors have stronger multiplier effects on economic growth than declining sectors, their gains are more geographically concentrated compared with sectors in relative decline. For instance, gains to internet, media, and software activities are captured by just 10 percent of US counties, which account for 90 percent of GDP in that sector.

- For cities, we analyze 3,000 of the world's largest cities, each with a population of at least 150,000 and $125 million GDP (adjusted for purchasing power parity), that together account for 67 percent of world GDP. Fifty cities are superstars by our definition, among them Boston, Frankfurt, London, Manila, Mexico City, Mumbai, New York, Sydney, Sao Paulo, Tianjin, and Wuhan. The 50 cities account for 8 percent of global population, 21 percent of world GDP, 37 percent of urban high-income households, and 45 percent of headquarters of firms with more than $1 billion in annual revenue. The average GDP per capita in these cities is 45 percent higher than that of peers in the same region and income group, and the gap has grown over the past decade.

- Emerging-market superstar cities have increased their contribution to global GDP by 30 to 40 percent in the past decade while advanced-economy superstar cities have increased their share of global GDP by 20 to 30 percent. Over the past decade, we find a 25 percent churn rate among superstar cities as some advanced-economy cities such as Rome, San Diego, and Vienna have been displaced by emerging-market cities such as Jakarta, Kuala Lumpur, and New Delhi with stronger income and population growth relative to peers in the same region and income group. The growth of superstar cities is fueled by gains in labor income and wealth from real estate and investor income, yet many show higher rates of income inequality within the cities than peers.

- Superstar cities share some characteristics in addition to their economic size and incomes. Of the 50 superstar cities, 31 are ranked among the most globally integrated cities, 27 among the world's 50 most innovative cities, 26 among the world's top 50 financial centers, and 23 among the world's 50 "digitally smartest" cities. Twenty-two are national and regional capitals, while 22 are among the world's largest container ports. At the same time, a notable number of superstar cities (and not just the city-states) have a disproportionate share of their national income given their share of the population. In addition to the 50 global superstars, we identify more than 75 regional superstar cities

that are smaller but share many of these characteristics and could become global economic hubs in the future.

- We find linkages between firms, sectors, and cities that may be reinforcing superstar status and that raise the question of whether a "superstar ecosystem" exists. For example, superstar sectors generate surplus mostly to corporations rather than to labor, driving a geographically concentrated wealth effect in superstar cities with a disproportionate share of asset management activity and high-income-household investors. Labor gains from superstar sectors are also concentrated in narrow geographic footprints within countries, often in superstar cities and accrue mostly to high-skill workers. But counter observations also raise questions. For example, why do some superstar sectors but not others produce superstar firms? What explains superstar firms in declining sectors? Why do some superstar sectors and firms thrive despite their low digital intensity, low R&D intensity, or low levels of cross-border trade and investment activity?

Our analysis so far raises questions for further research. For instance, we find that many suggested explanations of the superstar effect, such as productivity growth, technological or regulatory advantage, and intangible investments, do not fully or individually account for the phenomenon. What combination of factors leads to the emergence of superstar firms, sectors, and cities? How much of the superstar effect among firms is due to changes in the macroeconomy, including changes in value associated with different types of inputs and outputs? Or indeed the wider accessibility of large global markets and low interest rates? How much is due to firm-specific investments in R&D and intangibles? What is the economic impact of superstars, both positive and negative, on innovation and competition, jobs and wages, investment and productivity, growth of smaller firms, consumer surplus, and overall prosperity and inclusive growth? Is there in fact a superstar ecosystem, and what are the implications? What about the large, lower decile performers in the case of firms or the large, non-superstar cities that may be getting left behind; what is needed and how could these be turned around?

While further research is needed to properly inform implications for companies and policy makers, these findings already suggest some competitiveness and value creation imperatives for companies and raise questions policy makers should consider. For example, for companies, it is easy to fall and possible to rise; productivity matters but is not enough. Inorganic growth, bold investments in intangibles, and attracting talent can make the difference; and while being in the right sector and geography helps, the challenge of being in a declining sector can be overcome. Ultimately, though, for companies, value creation matters more than size for its own sake. The growth of superstar firms, sectors, and cities also creates policy questions beyond the causes of superstars and their effects on competition and market structure, to include implications for inclusive economic growth that can support and sustain broad-based employment and wage growth. The findings in this paper are by no means the last word on the topic of superstars, and indeed we have highlighted questions that require further research to inform smart policies by policy leaders and winning strategies by business leaders, all with the goal of not only value creation, but more inclusive growth and shared prosperity.

1. INTRODUCTION AND APPROACH

The rapid growth of large global firms, including high-tech companies, in recent years has been fueling the use of the term "superstar" in mainstream media and spurring debate among policy makers and the business community about the changing nature of firms and markets. While a growing body of economic research has focused on whether corporate revenues and profits are increasingly concentrated among a relatively small number of firms, the evidence remains inconclusive and many questions still unanswered. As it stands today, questions remain about where and to what extent the superstar phenomenon can be observed, whether it is different from what has occurred in the past, what effects this has on the rest of the economy, and the business and policy implications.[1] Many of these questions also hinge on how superstars are defined as well as how their effects are measured.

This paper focuses on whether superstars as we define the term exist, where they can be found, and what dynamics and effects can be observed about them. The central questions we ask are whether and to what extent superstar phenomena can be observed in the three areas we examine, across firms, sectors, and cities, and what characteristics, similarities, and differences can be observed among these entities. We also try to understand how persistent these effects are, whether there are overlaps between superstar income gains and other aspects of performance (such as productivity, technological maturity, or intangible capital), and whether linkages exist between superstar firms, sectors, and cities.

In this first section, we outline how superstar firms are typically defined in the current economic literature and what that misses. We then lay out our definition and approach as well as the reasons for expanding our focus beyond firms to sectors and cities. In part, a sector perspective provides an indication of the size of superstar profits in relation to the entire economy—at $3.5 trillion in pretax earnings, superstar firms' earnings represent 13 to 15 percent of the entire global pool of economic surplus and 22 to 25 percent of all corporate earnings worldwide (Exhibit 1).[2]

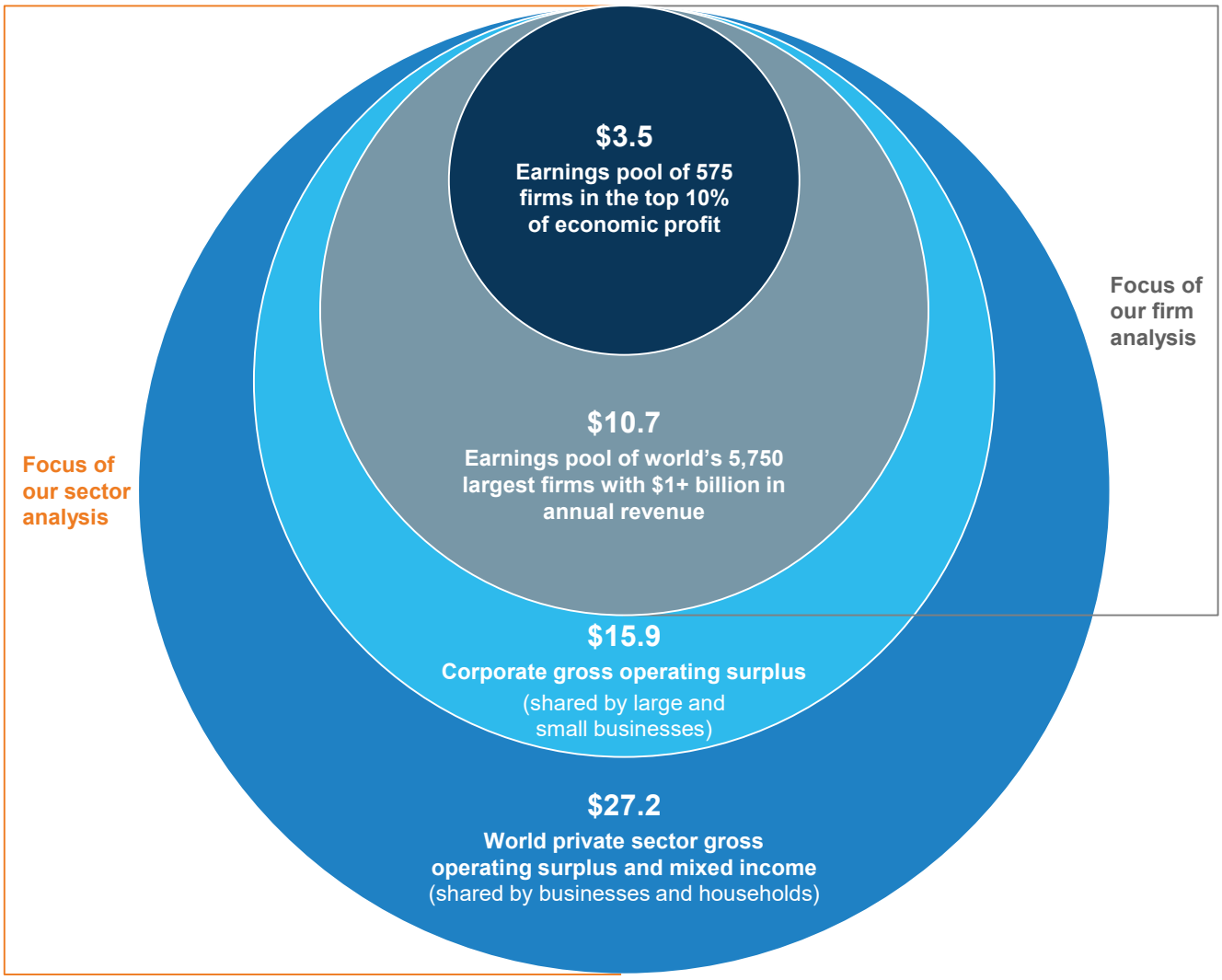
1 Neil Irwin, "Are superstar firms and the Amazon effect reshaping the economy?" *New York Times,* August 25, 2018; Paul Kiernan, "Inequality grows between top firms, everyone else, paper finds," *Wall Street Journal,* August 24, 2018; Jason Douglas, "BOE economist warns of giant firms' effects on inflation, growth," *Wall Street Journal,* August 24, 2018.

2 Gross operating surplus is an economic measure that represents the income earned by capital. It is calculated as gross value added less compensation of employees and taxes on production and imports. EBITDA (earnings before interest, tax, depreciation, and amortization expenses) plus research and development expense (R&D), is the closest corporate financial proxy for the economic measure of gross operating surplus. See Peter Chen, Loukas Karabarbounis, and Brent Neiman, "The global rise of corporate saving," working paper number 736, Federal Reserve Bank of Minneapolis, March 2017. Corporate earnings pools are estimated based on EBITDA margin and R&D expenses relative to total revenue pools in each category. EBITDA margins of 12.6 percent, 14.3 percent, and 18.1 percent, and R&D-to-sales ratios of 3.0 percent, 4.9 percent, and 7.0 percent used for firms in McKinsey's corporate finance data set, firms with over $1 billion in annual revenue, and firms in top 10 percent of economic profit, respectively.

Exhibit 1

Superstar firms account for about 13 to 15 percent of global surplus and 22 to 25 percent of corporate earnings.

World gross operating surplus and share accruing to corporations as EBITDA[1]
$ trillion, 2014–16 (3-year average)


$3.5
Earnings pool of 575 firms in the top 10% of economic profit
$10.7
Earnings pool of world's 5,750 largest firms with $1+ billion in annual revenue
$15.9
Corporate gross operating surplus
(shared by large and small businesses)
$27.2
World private sector gross operating surplus and mixed income
(shared by businesses and households)
Focus of our firm analysis
Focus of our sector analysis

1 Gross operating surplus is an economic measure that represents the income earned by capital. It is calculated as gross value added less compensation of employees and taxes on production and imports. EBITDA (earnings before interest, tax, depreciation, and amortization expenses) plus research and development expense (R&D), is the closest corporate financial proxy for the economic measure of gross operating surplus. See Peter Chen, Loukas Karabarbounis, and Brent Neiman, "The global rise of corporate saving," working paper number 736, Federal Reserve Bank of Minneapolis, March 2017. Corporate earnings pools are estimated based on EBITDA margin and R&D expenses relative to total revenue pools in each category. EBITDA margins of 12.6%, 14.3%, and 18.1%, and R&D-to-sales ratios of 3.0%, 4.9%, and 7.0% used for firms in McKinsey's corporate finance data set, firms with over $1 billion in annual revenue, and firms in top 10% of economic profit, respectively.

SOURCE: IHS; OECD; McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

THERE IS NO STANDARD DEFINITION OF A SUPERSTAR FIRM, BUT OUTSIZE RETURNS AND PRODUCTIVITY ARE OFTEN VIEWED AS THE PRIMARY ATTRIBUTES

The definition of a superstar firm in current economic literature generally falls into one of three types, with the corresponding evidence and some causes of the superstar effect becoming more plausible as a consequence of the definition (See Box 1, "Recent findings about superstars in economic literature"). These three often used definition types are:

- **Increasing convexity of returns:** Here, superstars are the largest firms in a market and capture the greatest gains in revenue share, often accompanied by higher profit margins.

This is more generally termed the "Matthew Effect," summarized as "to those who have, more shall be given."[3] While not conclusive, some drivers implicitly considered as factors in this literature are market power, global footprint, or innovation advantage.

- **Outsize gains relative to inputs:** With this definition, superstars are firms that achieve outsize gains in market share for marginal improvements in productivity, regardless of their starting market position. Originally used in the context of individuals such as artists and athletes, the term is now used for firms and cities as well.[4] The drivers of such a phenomenon can often be high customer switching costs or new distribution technologies such as digital platforms.

- **Massive economies of scale:** Here, superstars are giant firms that use their size to drive productivity growth, driving down marginal costs of expansion and gaining even more market share in the process. Dating to Adam Smith, this notion has gained new relevance with the growth of hyperscale digital platforms that have near-zero marginal costs.[5] The drivers of such superstar firms can be a combination of technological advantage, productivity growth, and market power.

OUR APPROACH TO SUPERSTAR FIRMS AND THEIR DYNAMICS FOCUSES ON ECONOMIC PROFIT AS THE KEY MEASURE

The definitions currently used in economics often do not consider whether superstar firms generate economic value from their activities. A firm's economic profit is a measure of its value creation. A large global firm may have significant market share and be productive, but if it records negative economic profit, then it may be a value-destroying entity. In a sample of large global companies, for instance, we find little correlation between revenue size, productivity growth, and economic profit. In addition, the term "superstar firm" has often been used in subjective ways in the broader public debate, with either a positive or a negative connotation. In our research, we use the label for its familiarity, but we deliberately apply the term in a neutral and nonevaluative way, while at the same time giving it an objective definition that allows us to measure and assess its extent.

We consider economic profit as the starting point to gauge if there are indeed superstar firms.[6] Economic profit is calculated as a firm's invested capital times the difference between its return on invested capital and its cost of capital. It thus reflects the firm's net operating profit and its net invested capital (including goodwill and other intangible capital), and the corresponding return relative to an inflation-adjusted cost of capital.[7] We also focus on firms with revenues above $1 billion because they account for two thirds of corporate economic activity, measured by both revenue and profits.

We thus begin with a definition of superstars that focuses on value creation. For firms, we mean those that have a substantially greater share of economic profit than their peers and are rapidly pulling away from their peers over time in terms of economic profit share. Within this subset, we can identify firms that also meet other criteria such as productivity growth, technological maturity, or organizational capacity—and which firms' economic profit reflects their regulatory or domestic environment, such as with some banks, infrastructure, energy, and telecom companies.

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3 Robert K. Merton, "The Matthew effect in science," *Science,* 1968, Volume 159, Number 3810, January 1968; Monika Mrazova and Peter J. Neary, "Selection effects with heterogeneous firms," Centre for Economic Performance discussion paper number 1174, London School of Economics and Political Science, October 2012.

4 Sherwin Rosen, "The economics of superstars," *The American Economic Review*, 1981, Volume 71, Number 5.

5 James Manyika and Michael Chui, "Digital era brings hyperscale challenges," *Financial Times,* August 2014.

6 Chris Bradley, Angus Dawson, and Sven Smit, "The strategic yardstick you can't afford to ignore," *McKinsey Quarterly*, October 2013. Also see Tim Koller, Marc Goedhart, and David Wessels, *Valuation: Measuring and managing the value of companies,* Hoboken, NJ: John Wiley & Sons, 2005.

7 See the technical appendix for more details on our methodology.

Box 1. Recent findings about superstars in economic literature

Economic research on superstars includes promising new lines of inquiry into the extent of superstar effects, causes, and implications. Recent economic literature—notably by Furman and Orszag, de Loecker and Eeckhout, and Autor et al., among others—highlights, for instance, rising industry concentration ratios in France, Germany, Japan, and the United States over the past one to two decades. It links this trend to the decline of labor share in GDP and to the increase in profit markups (relative to marginal costs) and profit share (relative to GDP) in many regions.[1] Calligaris et al. and, recently, Crouzet and Eberly link some of these trends to weak investment in physical capital and growth in intangible capital, highlighting the role of digital intensity, intellectual property, and managerial and technological capabilities.[2] In addition, research by Bessen and by Shapiro on industry dynamics suggests that profits have increased substantially in some sectors in the United States and Europe, linking this trend to the role of both intangible assets and increased regulation.[3] There are implications for the geographic spread of economic gains as well, with research pointing to the regional concentration of growth in incomes, jobs, and new businesses during economic recoveries.[4] Research on superstar cities and regional income concentration by Glaeser et al. focuses on the benefits of agglomeration to productivity, innovation, and human capital attraction—and Gyourko et al. have also recently linked superstar cities to the inelastic supply of urban land and affordable housing.[5]

However, evidence surrounding superstars is still emerging and varies depending on definitions. In a recent paper, the Organisation for Economic Co-operation and Development determined that the evidence so far has not been conclusive about whether superstars exist or what factors may be driving them.[6] Yet others have suggested that while the superstar effect is real, it is premature to draw conclusions about whether it is increasing over time, and that measurement errors tend to overstate the effect.[7] Traina, for instance, shows that when variable costs such as marketing and distribution expenses are included, profit markups increase only modestly. Ayyagari et al. show that a widening gap among firms' return on invested capital can be largely explained by errors in measuring intangible capital. Other factors cited as possible causes include outdated definitions of market boundaries that create spurious concentration effects, and a range of challenges in measuring fixed costs and profit markups. As a result, the implications are also unclear. Van Reenen, for instance, shows that the reallocation of profits toward some firms could be due to technological change or globalization, and it may signal a change from competition "in the market" to competition "for the market" (rather than an overall weakening of competition).

Our research in this paper builds on our prior research on corporate profits to fill some of these gaps.[8] It also widens the research on this issue by examining the extent to which the superstar effect can be observed across not only firms, but also sectors and cities, and testing what linkages, if any, exist. We draw on MGI's and McKinsey's work on economics, productivity, cities, and sectors to bring together an evidence base that we hope contributes to a deeper understanding of the topic.[9]

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1 Jason Furman and Peter Orszag, "A firm-level perspective on the role of rents in the rise in inequality," paper presented at Columbia University's "A Just Society" centennial event in honor of Joseph Stiglitz, October 2015; David Autor et al., *The fall of the labor share and the rise of superstar firms*, NBER working paper number 23396, May 2017; Jan de Loecker and Jan Eeckhout, *The rise of market power and its economic implications,* NBER working paper number 23687, August 2017; Jan de Loecker and Jan Eeckhout, *Global market power*, NBER working paper number 24768, June 2018; Simcha Barkai, "Declining labor and capital shares," New working paper series number 2, Stigler Center for the Study of the Economy and the State, University of Chicago Booth School of Business, November 2016.

2 Sara Calligaris, Chiara Criscuolo, and Luca Marcolin, *Mark-ups in the digital era*, OECD Science, Technology and Industry Working Papers, number 2018/10, April 2018; Nicolas Crouzet and Janice Eberly, "Understanding weak capital investment: The role of market concentration and intangibles," prepared for the Jackson Hole Economic Policy Symposium, August 2018.

3 James E. Bessen, *Information technology and industry concentration*, Boston University School of Law, Law and Economics Research Paper number 17-41, December 2017; Carl Shapiro, "Antitrust in a time of populism," *International Journal of Industrial Organization,* February 2018.

4 *Escape velocity: How elite communities are pulling away in the 21st century race for jobs, businesses, and human capital,* Economic Innovation Group, May 2018.

5 *Agglomeration economics,* NBER conference report, edited by Edward L. Glaeser, University of Chicago Press, February 2010; Joseph Gyourko, Christopher Mayer, and Todd Sinai, "Superstar cities," *American Economic Journal*: *Economic Policy,* 2013, Volume 5, Number 4.

6 *Market concentration,* Organisation for Economic Co-operation and Development (OECD), June 2018.

7 James Traina, "Is aggregate market power increasing? Production trends using financial statements," New working paper series number 17, Stigler Center for the Study of the Economy and the State, University of Chicago Booth School of Business, February 2018; Robert E. Hall, *New evidence on the markup of prices over marginal costs and the role of mega-firms in the US economy*, NBER working paper number 24574, April 2018; Meghana Ayyagari, Asli Demirguc-Kunt, and Vojislav Maksimovic, *Who are America's star firms?* World Bank policy research working paper number 8534, July 2018; John van Reenen, "Increasing differences between firms: Market power and the macro-economy," draft prepared for Jackson Hole Economic Symposium, July 2018.

8 *Playing to win: The new global competition for corporate profits*, McKinsey Global Institute, September 2015.

9 *Smart cities: Digital solutions for a more livable future,* McKinsey Global Institute, June 2018; *Smart cities: Turning opportunity into reality,* McKinsey Global Institute, December 2017; *Urban world: Cities and the rise of the consuming class,* McKinsey Global Institute, June 2012.

Our analysis of firms relies on company-level financial data sourced from CPAnalytics, McKinsey's proprietary global data set that covers around 600,000 corporations, including financial institutions and both publicly listed and private firms. From this data set, we identify firms with sufficient financial information to estimate economic profit, and consolidate wholly owned subsidiaries into their parent firms, to create a set of nearly 33,000 global "parent" companies that have revenues greater than $200 million in any of the reported years. From this set of 33,000 firms, we identify 5,750 firms that are the world's largest companies by revenue; they make up our primary data set for analysis. Together these 5,750 firms account for two-thirds of global corporate revenue and pretax profits (measured as EBITDA, or earnings before deducting interest, tax, depreciation, and amortization expenses). Each firm is assigned to one primary sector of activity from 89 industries and 210 sub-industries that are based on the Global Industry Classification Standard (GICS), an industry taxonomy that is the basis for financial market indices and is widely used as an analytical framework for investment research and portfolio management.[8]

Our timeframe for the analysis of firms is 1994 to 2016. This timeframe starts and ends at the midpoints of a business cycle to ensure that peak-to-trough or trough-to-peak transitions do not distort the results. The 20-year timeframe also ensures some robustness against events such as boom and bust cycles in technology, finance, and natural resources, all of which occurred within this period along with other localized cycles. In a few cases, the timeframe extends back another 10 to 15 years to check for robustness or for contrasts.

OUR EXAMINATION OF SUPERSTARS EXTENDS TO CITIES AND SECTORS OF ECONOMIC ACTIVITY, IN PART TO TEST LINKAGES TO SUPERSTAR FIRMS

We also broaden our lens to consider other forms of superstars—in particular, sectors and cities—using similar measures of income.[9] As with superstar firms, our approach has been to test whether some cities and sectors see a disproportionate share of income, or "currency," accruing to them, allowing them to pull away from peers over time. We focus on income shares and measure how those returns are distributed and to whom. Among sectors, for instance, the business activity and income captured go not just to corporations, but also to other types of enterprises such as unincorporated private businesses and self-employed households.

For cities, the metric includes urban GDP and personal income per capita, but with a consideration for the city's contribution to regional GDP and its PPP-adjusted GDP relative to other world cities. We base our analysis of cities on MGI's CityScope data set of the world's 3,000 largest cities by population, each with a population greater than 150,000 and PPP-adjusted GDP of over $125 million.[10] We analyze the labor and wealth effects that drive income growth in some superstar cities to understand if there are linkages between superstar firms and cities.

Our definition of sectors relies on the International Standard Industrial Classification (ISIC), which is the internationally adopted standard to classify and report all productive economic activity according to common definitions and accounting rules.[11] For sectors, the income metrics we test are gross value added and gross operating surplus. A sector's gross value added is the value of its output less the value of its intermediate inputs, and it reflects the contribution made by that economic activity to GDP. A sector's gross operating surplus, or gross operating profit, is equal to gross value added less employee compensation and production and import taxes.

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8 "Global Industry Classification Standard," MSCI. For more information see www.msci.com/gics.

9 We do not examine superstar individuals in this paper, but assessment of this in conjunction with firms, sectors, and cities could yield interesting insights.

10 For more details on our cities methodology, see the technical appendix.

11 "International standard industrial classification of all economic activities, revision 4," United Nations Department of Economic and Social Affairs, Statistics Division, 2008.

The primary sources of sector data are the national accounts of countries that make up the G-20 group of large economies. The data are generally reported at the "establishment" level—a term that denotes a distinct local unit of activity such as a factory, mine, warehouse, retail store, bank, laboratory, or office. The ISIC standard groups together establishments engaged in similar activities to compile production statistics at the "industry" level, creating 38 aggregated industries such as mining and quarrying, transportation and storage, and financial and insurance activities. From these ISIC industries we create 24 sectors that cover all private-sector business activity, and at times in this paper we further simplify for presentation purposes by classifying these 24 sectors into seven sector groups (Exhibit 2). These groups are: capital goods, consumer goods, information technology, financial services, business services, consumer services, and infrastructure.[12] The timeframe of sector-level analysis is 1995 to 2017 to match the timeframe of firm-level analysis over two business cycles; it extends back to 1980 occasionally to highlight contrasting trends in the previous two decades.

Exhibit 2

The sectors we analyze can be categorized into seven sector groups based on the shared attributes of establishments engaged in these economic activities.

Capital goods	Consumer goods	Information technology	Financial services	Business services	Consumer services	Infrastructure
Production activities related to: ▪ Automobiles and parts ▪ Fabricated components ▪ Industrial chemicals ▪ Machinery and equipment	**Production activities related to:** ▪ Apparel and luxury goods ▪ Consumer packaged goods ▪ Food, beverage, and tobacco products ▪ Pharma-ceuticals and medical products	**Production activities related to:** ▪ Computers and electronics ▪ Internet, media, and software (including content creation and distribution activities)	**Delivery of services related to:** ▪ Asset manage-ment ▪ Banking ▪ Insurance ▪ Real estate (including activities and imputed rents related to owned and leased property)	**Delivery of B2B services related to:** ▪ Construction ▪ Distribution and logistics ▪ Professional services (such as accounting, scientific, technical, and legal services)	**Delivery of B2C services related to:** ▪ Healthcare ▪ Hospitality ▪ Retail	**Development and operation of assets for:** ▪ Natural resource processing ▪ Telecom-munications ▪ Transpor-tation ▪ Utilities

NOTE: See technical appendix for more detail.

SOURCE: "International standard industrial classification of all economic activities, revision 4," United Nations Department of Economic and Social Affairs, Statistics Division, 2008; McKinsey Global Institute analysis

A sector's gross operating surplus reflects the gains accruing to the establishments that fall within the sector's boundary, all of which perform similar activities. These establishments may belong to firms from a range of different industries—or even to noncorporate entities such as unincorporated private businesses, nonprofit institutions, and self-employed households. The nearest proxy for gross operating surplus in corporate finance is EBITDA, which is the topmost measure in an income statement of the cash flow that is available for

[12] For more details on our sector methodology, see the technical appendix and Exhibit A1.

reinvestment and to support the firm's credit and tax obligations—with the major difference being that while EBITDA is calculated for a firm, gross operating surplus is calculated for an establishment (See Box 2, "The establishment-level view versus the firm-level view").

Box 2. The establishment-level view versus the firm-level view

An establishment is one part of a firm that focuses on a distinct economic activity. A firm, on the other hand, can have many activities going on, ranging from product research and design to production, distribution, financing, and customer service. Thus a firm (or, more correctly, an "enterprise"—the term for an institutional entity such as a corporation or an unincorporated private business) can have several establishments, but an establishment is typically associated with only one enterprise. In this paper, we consider both the firm view (in the section on firms) and the establishment view (in the section on sectors). The two views allow us to contrast our firm-level findings with sector-level findings to see, for instance, if successful firms engage in common activities at the establishment level.

As an example, each of Walmart's retail stores can be considered an establishment. The output and value added of these stores is aggregated into retail trade (ISIC code 47). But Walmart's other establishments, such as its headquarters or its R&D and technology centers, may be considered part of other ISIC sectors even though they are part of the Walmart enterprise. For instance, the economic activity of Walmart's technology center may be aggregated into computer programming, consultancy, and related activities (ISIC 62); its headquarters' activity may be part of "activities of head offices" (ISIC 701).

We classify establishments into 24 sectors based on clusters of similar activities and the importance of inputs such as capital, R&D, labor, or skill. Exhibit 2 illustrates this classification of establishments into sectors and broader sector groups and Exhibit 15 illustrates the clustering of various inputs among sectors and sector groups. For the majority of our 24 sectors, the distinction between establishment and enterprise, or between ISIC-defined sectors and GICS-defined sectors, is minor. But in a few sectors—such as computers and electronics, apparel and luxury goods, and pharmaceuticals and medical products—the distinction matters. In these sectors, there can be a notable difference between the enterprise and establishment view of output and surplus due to the disaggregation of value chains, growth of contract manufacturing, and shifts in profit upstream and downstream along the value chain. This distinction affects the way revenues and profits are aggregated in these sectors, with firms such as Apple, Nike, and Unilever.

Consider Apple as an example. As an enterprise, Apple is considered part of the technology hardware and equipment industry group (GICS 4520), a subset of the computers and electronics goods sector. But Apple has no manufacturing establishments—so in the establishment view, its economic activity is recorded mostly in the wholesale and distribution sector (ISIC 46), computer programming and related activities (ISIC 62), and activities of head offices (ISIC 701). In our analysis of superstar firms, Apple's revenues and profits would be part of the computers and electronics sector, while in our analysis of superstar sectors, Apple's gross operating surplus would be part of these other ISIC-defined sectors.

This distinction may help explain why the relationship between superstar firms and superstar sectors is evident but not conclusive.[1] Many firms may see profits from business activity that is not considered their primary activity. Examples include the financing activities of manufacturing firms, consulting activities of infrastructure firms, and internet and software activities of financial services firms. Understanding these activities is critical to determining why individual superstar firms see superstar economic profits—and having a sector view that is independent of firms helps provide this perspective.

We thus include sectors because we want to understand what types of economic activities are becoming more valuable. We sought a different measure for sectors than for firms, so that our analysis of sectors would not end up simply being an aggregation of our firm analysis and so that we could test commonalities across sectors and firms. For instance, an independent sector view allows us to test whether superstar firms come disproportionately from certain types of sectors. It also allows us to test to what extent one can observe superstar firms in non-superstar sectors and vice versa, and what factors may be at play.

[1] See Exhibit 25 for more details.

Clearly, sectors are not like firms or cities. Indeed, it may seem odd to think of sectors as superstars in the same way that firms and cities can be; there is no convexity of income distribution, for instance, and a sector can also seem more arbitrarily defined than a firm or city. Yet while a sector boundary may seem more fluid than a firm or city boundary, economic activities that take place within a sector are often more mutually consistent than those within a firm or a city. Sectors are, by definition, agglomerations of similar activities done at establishments such as factories, retail stores, warehouses, or laboratories. Thus, we acknowledge that sectors are not superstars in the same way firms and cities are superstars—yet it is clear that some activities are becoming more valuable over time, a few especially rapidly. Furthermore, as will be evident in this paper, many of the same superstar effects that we observe in firms and cities can also be observed in some sectors. We call these sectors superstar sectors as a matter of convenience.

2. FIRMS

Out of 5,750 of the world's largest firms by revenue (those firms with annual revenues above $1 billion), we label the top 10 percent in economic profit performance as superstars.[13] In this section, we discuss the dynamics related to this superstar category of firms, including economic profit capture, churn and contestability, as well as what is occurring among the whole group of large companies across the performance distribution from top decile to bottom. In addition we also discuss the characteristics of the firms in the superstar category, including what sectors and geographies they come from.

AMONG THE WORLD'S LARGEST PUBLIC AND PRIVATE FIRMS BY REVENUE, WE IDENTIFY THE TOP 10 PERCENT IN TERMS OF ECONOMIC PROFIT AS SUPERSTARS

Within the 5,750 largest public and private firms drawn from around the world, economic value creation, measured by economic profit, is distributed unevenly along a power curve.[14] Most firms capture near-zero economic profit as their gains are competed away, while those in the bottom deciles see large economic losses. However, the top 10 percent, 575 public and private companies globally, capture 80 percent of all economic profit (Exhibit 3). We identify this small group of 575 firms—the majority of them public companies—as superstars. In contrast, the bottom 10 percent destroys value roughly equivalent to the value that the top 10 percent creates.

Superstar firms stand out from other firms due to their size and profitability. Compared with median firms, superstar firms are seven times larger by revenue and enjoy a return on invested capital (ROIC) that is twice as high—nearly 15 percent, compared with median firms whose return on capital is approximately the same as their cost of capital. Compared with firms in the bottom 10 percent of economic profit, superstar firms are slightly larger by revenue but their ROIC is nearly five times higher. While the average ROIC hides large variations in individual firms' return, even relatively less-profitable superstar firms generate ROIC of at least 12 percent—1.5 times higher than median firms. Superstar firms' relative outperformance is also robust in alternative measures of ROIC. For instance, more than

[13] See technical appendix for details on the data set and methodology.

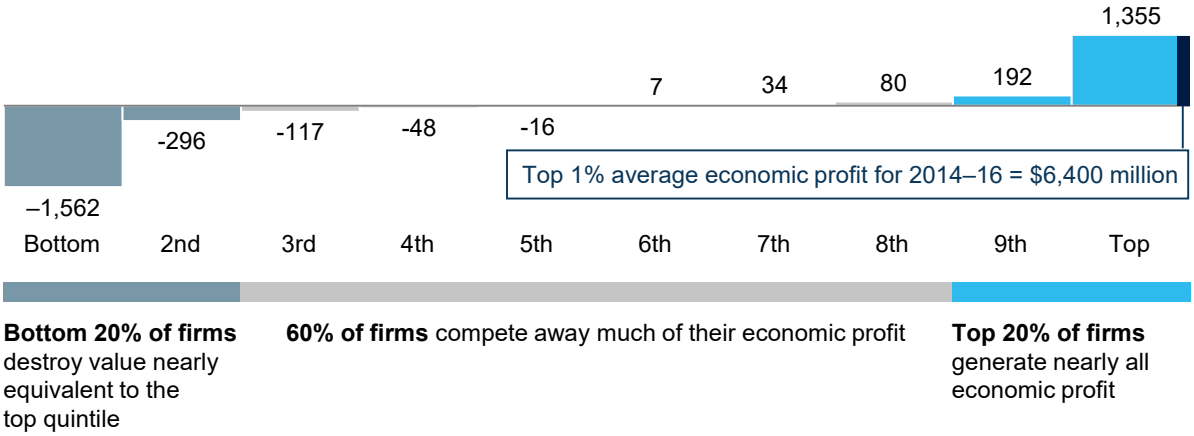
[14] Chris Bradley, Martin Hirt, and Sven Smit, *Strategy beyond the hockey stick*: *People, probabilities, and big moves to beat the odds,* Hoboken, NJ: John Wiley & Sons, 2018.

80 percent of superstar firms retain their position in the top decile even after we incorporate intangible capital from firms' own R&D and other expenditure.[15]

Exhibit 3

For firms, economic value creation (measured by economic profit) is distributed unevenly along a power curve.

Distribution of economic profit among large companies with average sales above $1 billion
Average economic profit per firm in each decile, 3-year average (2014–16) (n = 5,750)
$ million



Bottom 20% of firms destroy value nearly equivalent to the top quintile

60% of firms compete away much of their economic profit

Top 20% of firms generate nearly all economic profit

Number of firms	1,150	3,450	1,150
Share of revenues (%)	37	25	38
Share of net income (%)	20	17	63

NOTE: Economic profit calculated as invested capital times the difference between return on invested capital and weighted average cost of capital. Sample of 5,750 firms has 74% (4,254) public and 26% (1,492) private companies. While private firms make up 26% of the total sample, they are only 14% of the top 10% by economic profit. For more information on the power curve of economic profit, see Chris Bradley, Martin Hirt, and Sven Smit, *Strategy beyond the hockey stick: People, probabilities, and big moves to beat the odds*, Wiley, February 2018.

SOURCE: McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

SUPERSTAR FIRMS COME FROM EVERY SECTOR AND REGION, AND ARE MORE DIVERSE TODAY THAN 20 YEARS AGO

Contrary to popular perception, superstar firms are not solely US tech giants; they come from all sectors of the economy and regions of the world and their diversity has increased over the past 20 years, measured by both sector and country representation among superstar firms (Exhibit 4 and Exhibit 5).[16] They come disproportionately from the world's largest economies; more than 95 percent of them are from G-20 countries, which together make up roughly 80 percent of world GDP. American firms represent 38 percent of superstar firms today, compared with 45 percent 20 years ago. Companies headquartered in EU-15 countries make up 22 percent (down from 35 percent).[17] Asian economies have made substantial gains in superstar representation; firms from China, India, Japan, and Korea are 27 percent of the top 10 percent, up from 7 percent in the 1990s.

[15] Superstar firms' average ROIC of 15 percent and economic profit of $1.35 billion is based on invested capital that includes physical capital, working capital, and goodwill. The average ROIC falls to 10.5 percent, and economic profit to $920 million when we include "organic" intangible capital. This is done by capitalizing firms' R&D expenditure and a portion of their SG&A expenditure and affects the ROIC of superstar firms because they have substantially higher R&D spend than other firms. For more details about this approach Ryan H. Peters and Lucian A. Taylor, "Intangible capital and the investment-q relation," Journal of Financial Economics, Volume 123, Issue 2, February 2017.

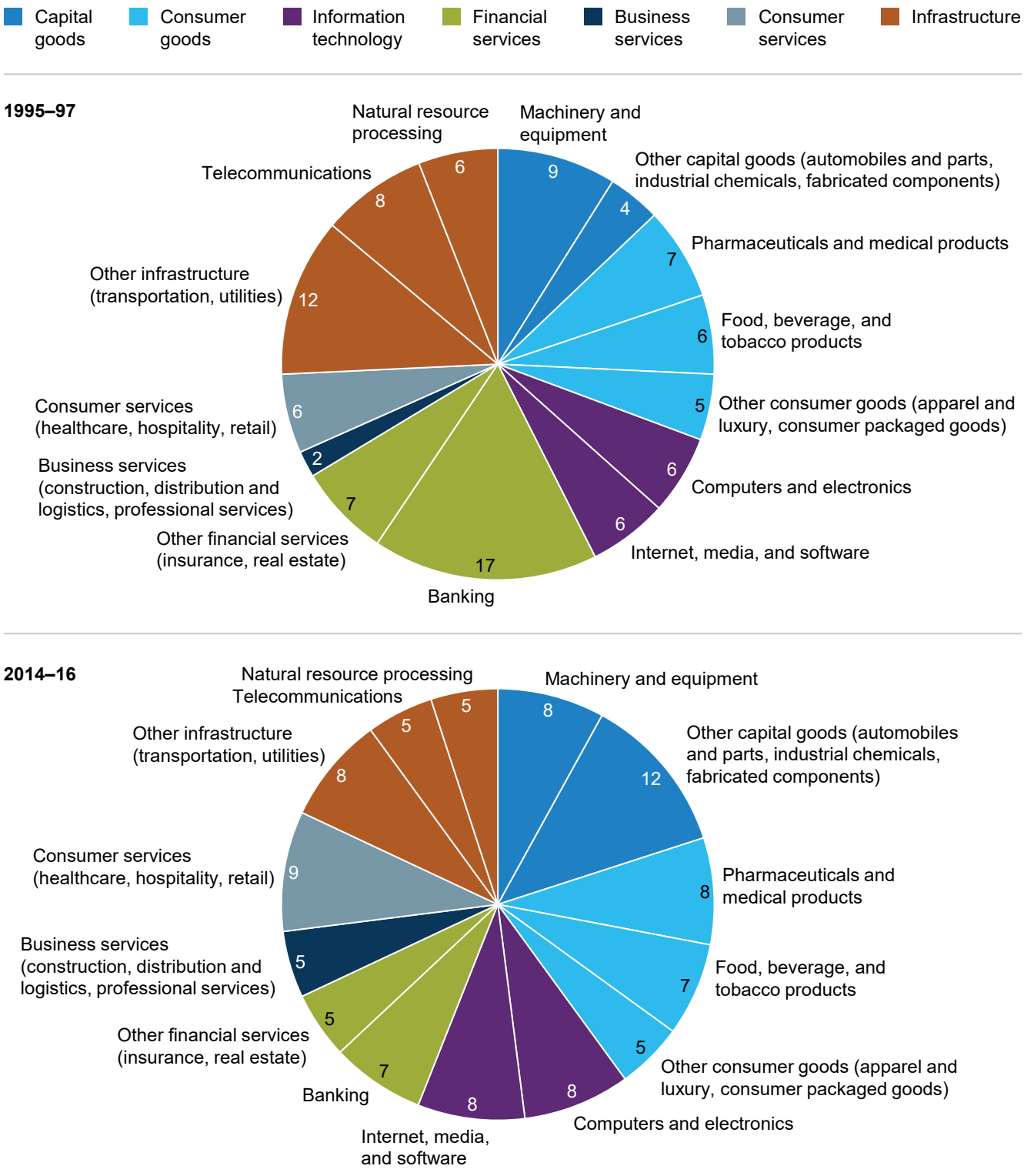
[16] Diversity is calculated using the Simpson Diversity Index, which is equivalent to the Herfindahl Index in economics and effectively measures the "market share" of each sector (or country) among the top decile or top 1 percent of firms by economic profit. The Index has fallen over time, indicating greater diversity and less dominance by any one sector or country.

[17] The EU-15 countries are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

Exhibit 4

Superstar firms come from all sectors of the global economy, and their diversity has increased over the past 20 years.

Representation of top-decile firms by sector
%


Capital goods
Consumer goods
Information technology
Financial services
Business services
Consumer services
Infrastructure
1995–97
Natural resource processing
Machinery and equipment
Telecommunications
Other capital goods (automobiles and parts, industrial chemicals, fabricated components)
Other infrastructure (transportation, utilities)
Pharmaceuticals and medical products
Food, beverage, and tobacco products
Consumer services (healthcare, hospitality, retail)
Other consumer goods (apparel and luxury, consumer packaged goods)
Business services (construction, distribution and logistics, professional services)
Computers and electronics
Other financial services (insurance, real estate)
Internet, media, and software
Banking
2014–16
Natural resource processing
Telecommunications
Machinery and equipment
Other infrastructure (transportation, utilities)
Other capital goods (automobiles and parts, industrial chemicals, fabricated components)
Consumer services (healthcare, hospitality, retail)
Pharmaceuticals and medical products
Business services (construction, distribution and logistics, professional services)
Food, beverage, and tobacco products
Other financial services (insurance, real estate)
Other consumer goods (apparel and luxury, consumer packaged goods)
Banking
Computers and electronics
Internet, media, and software

NOTE: Diversity is calculated using the Simpson Diversity Index, which is equivalent to the Herfindahl Index in economics and effectively measures the "market share" of each sector among the top 10 percent or top 1 percent of firms. The index has fallen over time, indicating greater diversity and less dominance by any one sector. Figures may not sum to 100% because of rounding.

SOURCE: McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

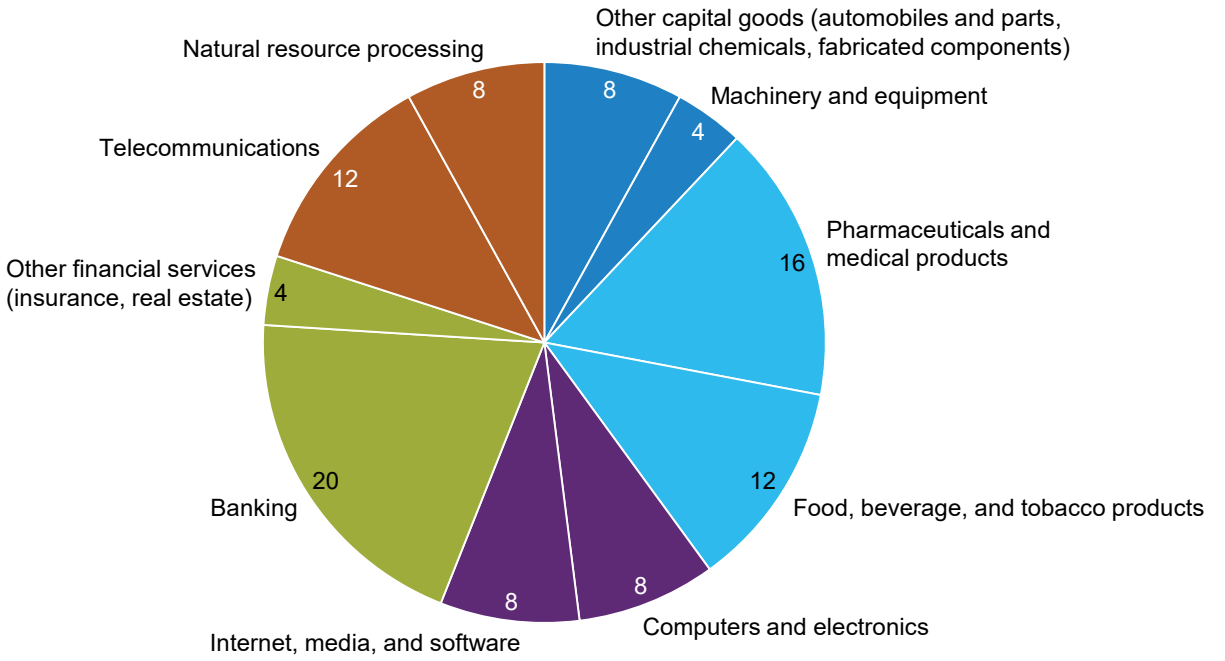
Exhibit 4 (continued)

Superstar firms come from all sectors of the global economy, and their diversity has increased over the past 20 years.

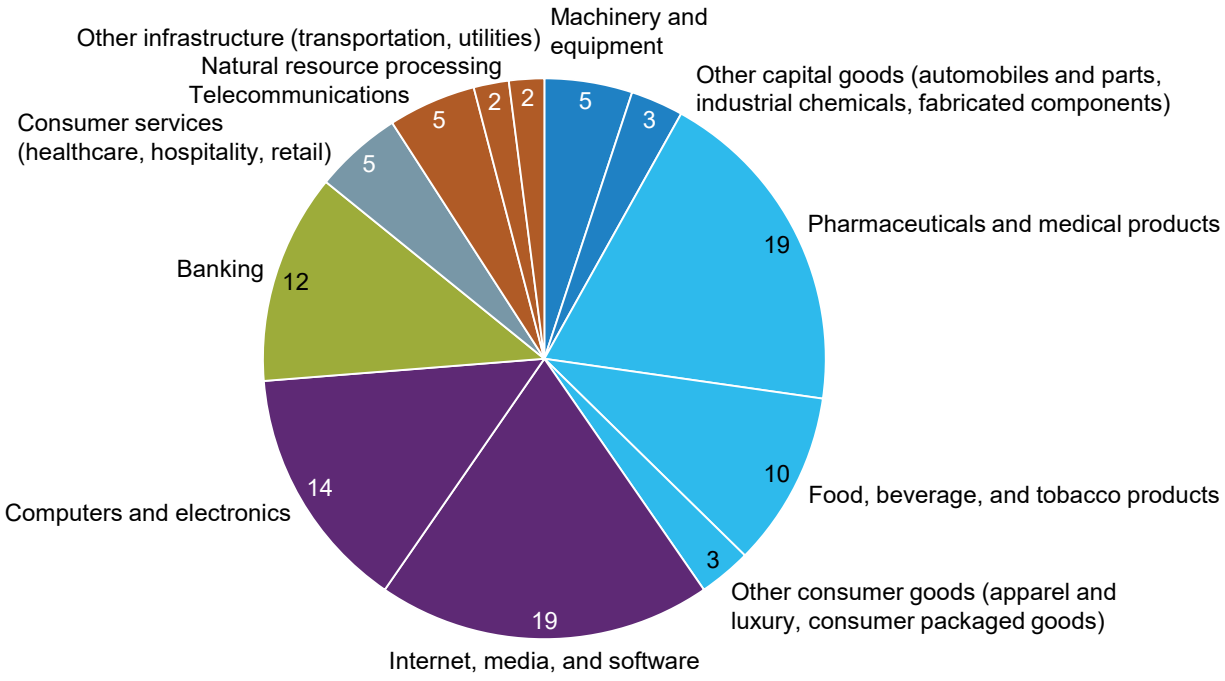
Representation of top-1% firms by sector
%

Capital goods | Consumer goods | Information technology | Financial services | Business services | Consumer services | Infrastructure

1995–97



2014–16



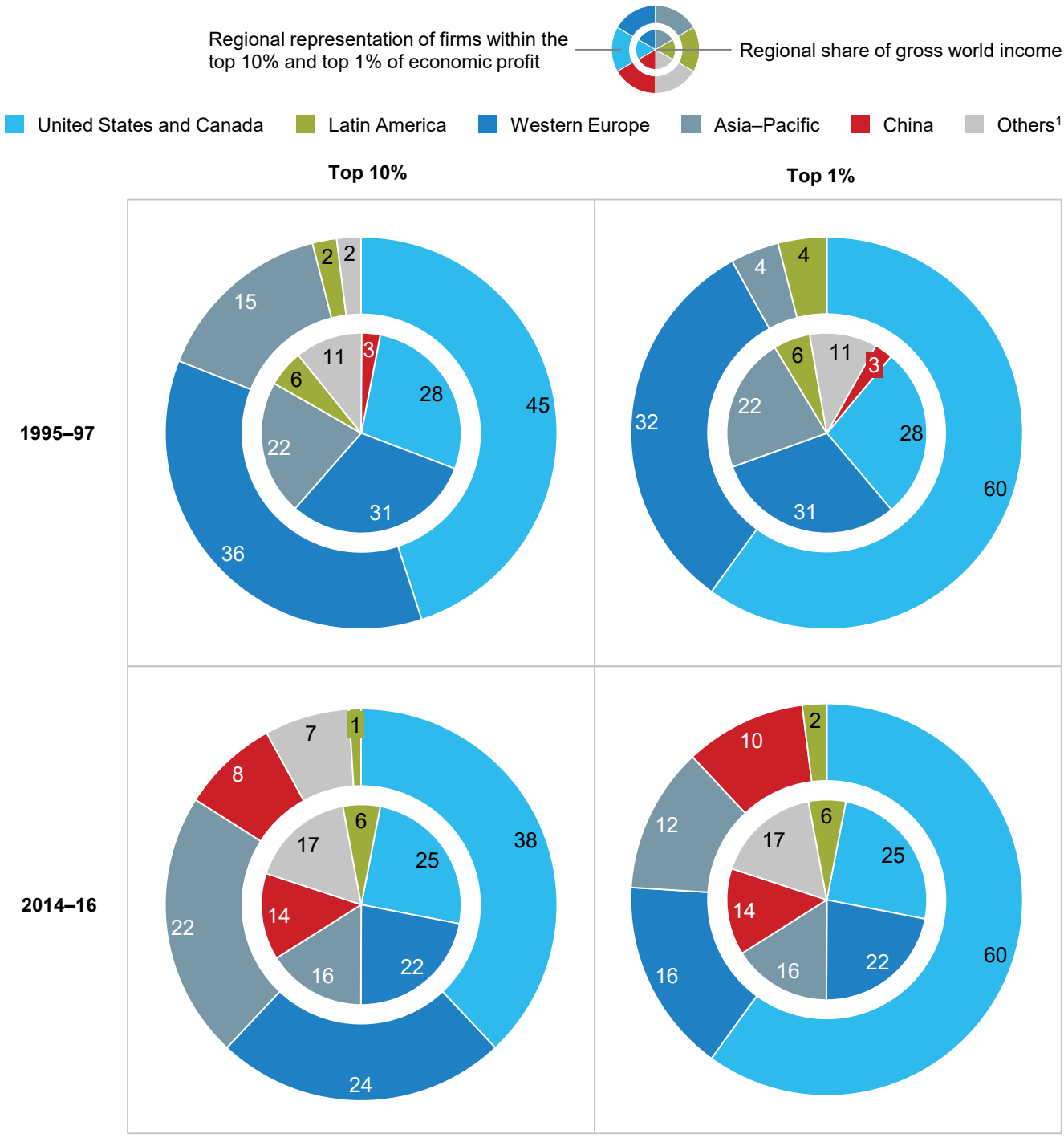
NOTE: Diversity is calculated using the Simpson Diversity Index, which is equivalent to the Herfindahl Index in economics and effectively measures the "market share" of each sector among the top 10 percent or top 1 percent of firms. The index has fallen over time, indicating greater diversity and less dominance by any one sector. Figures may not sum to 100% because of rounding.

SOURCE: McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

Exhibit 5

Superstar firms have become more geographically diverse over the past 20 years, though North American firms still make up the largest share.

Representation of top-decile firms by country or region
%



1 Primarily includes firms from Eastern Europe, Middle East and Africa, and the Caribbean.
NOTE: Diversity is calculated using the Simpson Diversity Index, which is equivalent to the Herfindahl Index in economics and effectively measures the "market share" of each country or region among the top 10 percent or top 1 percent of firms. The index has fallen over time, indicating greater diversity and less dominance by any one country or region. Figures may not sum to 100% because of rounding.

SOURCE: McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

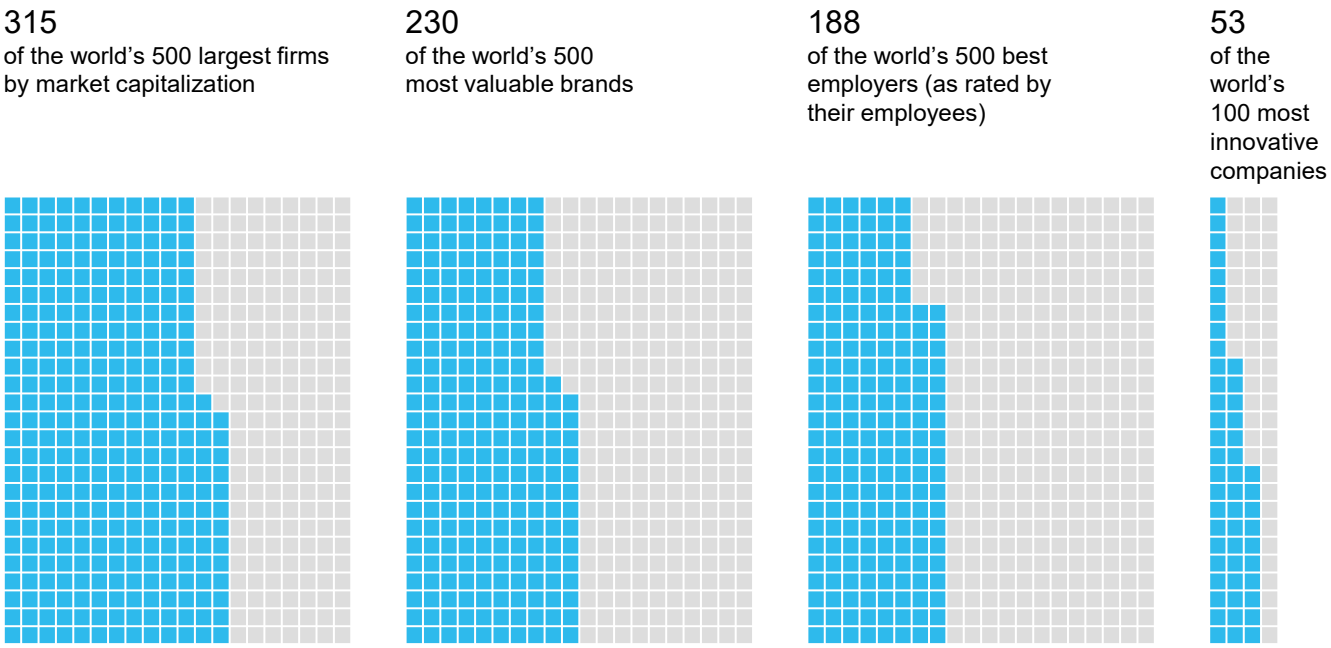
Superstar firms often appear on widely used rankings of top global companies (Exhibit 6). For example, out of 575 superstar firms, more than half are ranked in the top 500 global companies by market capitalization, 188 are ranked in the top 500 most desirable places to work, 230 are ranked in the top 500 global brands, and 53 are ranked in the top 100 of most innovative companies in the world.

Despite the diversity of superstar companies, however, a disproportionate number of superstars are American or European firms (relative to the total 5,750 in our sample), and from a handful of sectors such as consumer goods, apparel and luxury goods, pharmaceuticals and medical products, internet and media, banking, and insurance. The companies from these sectors are two to three times more likely to show up in the top 10 percent by economic profit than their peers among large global firms. These firms stand out for their well-known global brands, large outlays on R&D and on selling, general, and administrative expenses, and disproportionate share of intangible assets.[18] Companies from these sectors account for 60 percent of the economic profit in the top 10 percent (Exhibit 7).

Exhibit 6

Superstar firms include many companies that are the most valuable by market capitalization and brand and are considered the most innovative and the best places to work.

The 575 superstar companies include …


315
of the world's 500 largest firms by market capitalization
230
of the world's 500 most valuable brands
188
of the world's 500 best employers (as rated by their employees)
53
of the world's 100 most innovative companies

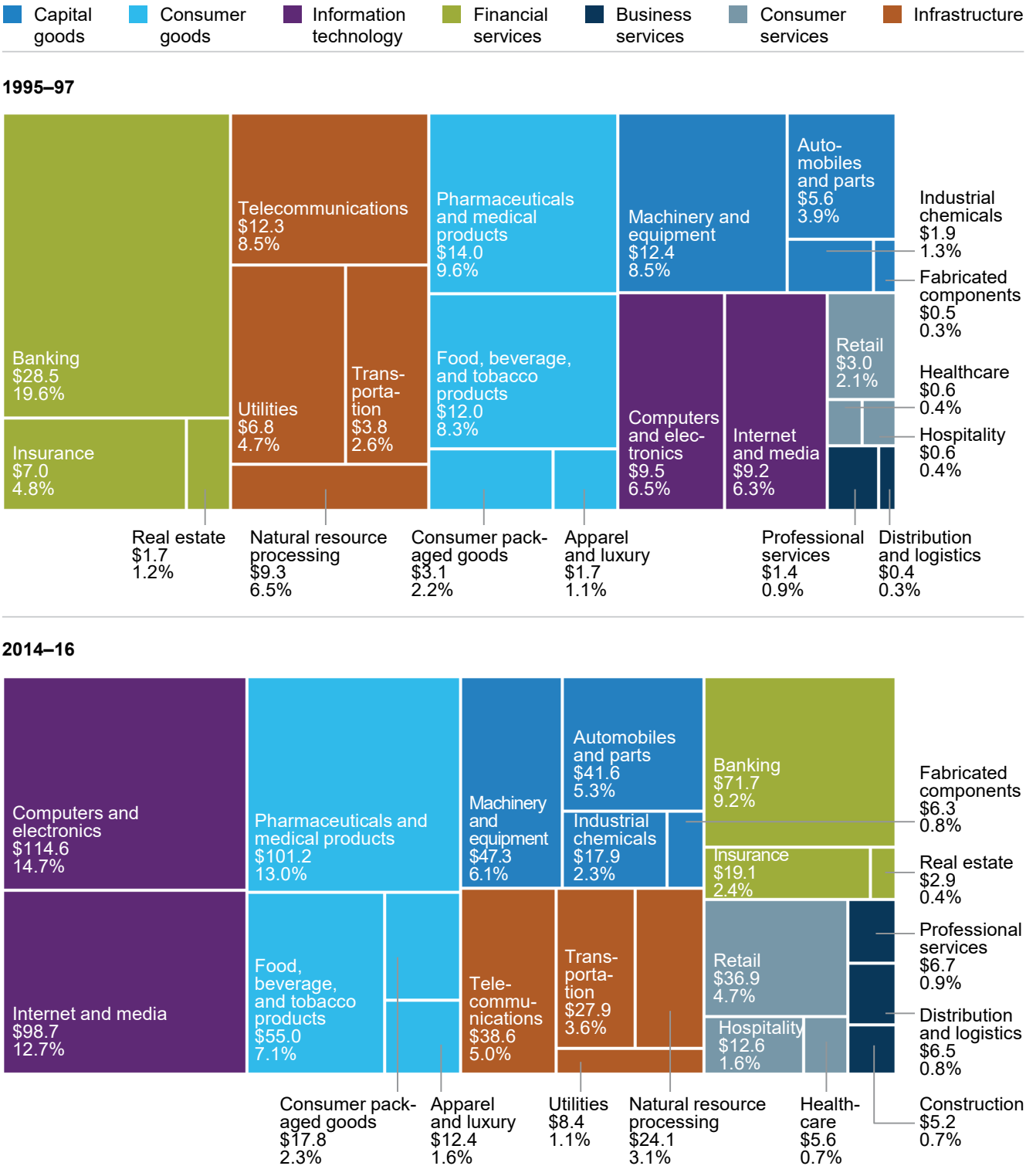
SOURCE: Capital IQ (world's largest firms by market cap); *Forbes* (world's best employers and world's most innovative companies); Brand Finance (world's most valuable brands); McKinsey Global Institute analysis

[18] Jonathan Haskel and Stian Westlake, *Capitalism without capital: The rise of the intangible economy,* Princeton, NJ: Princeton University Press, 2017.

Exhibit 7

Economic profit in the top 10 percent is shared by superstar firms from a wide range of sectors.

Distribution of economic profit among superstar firms by sector
Aggregate economic profit by firm, $ billion, 3-year average
Share of the top 10% of economic profit, %



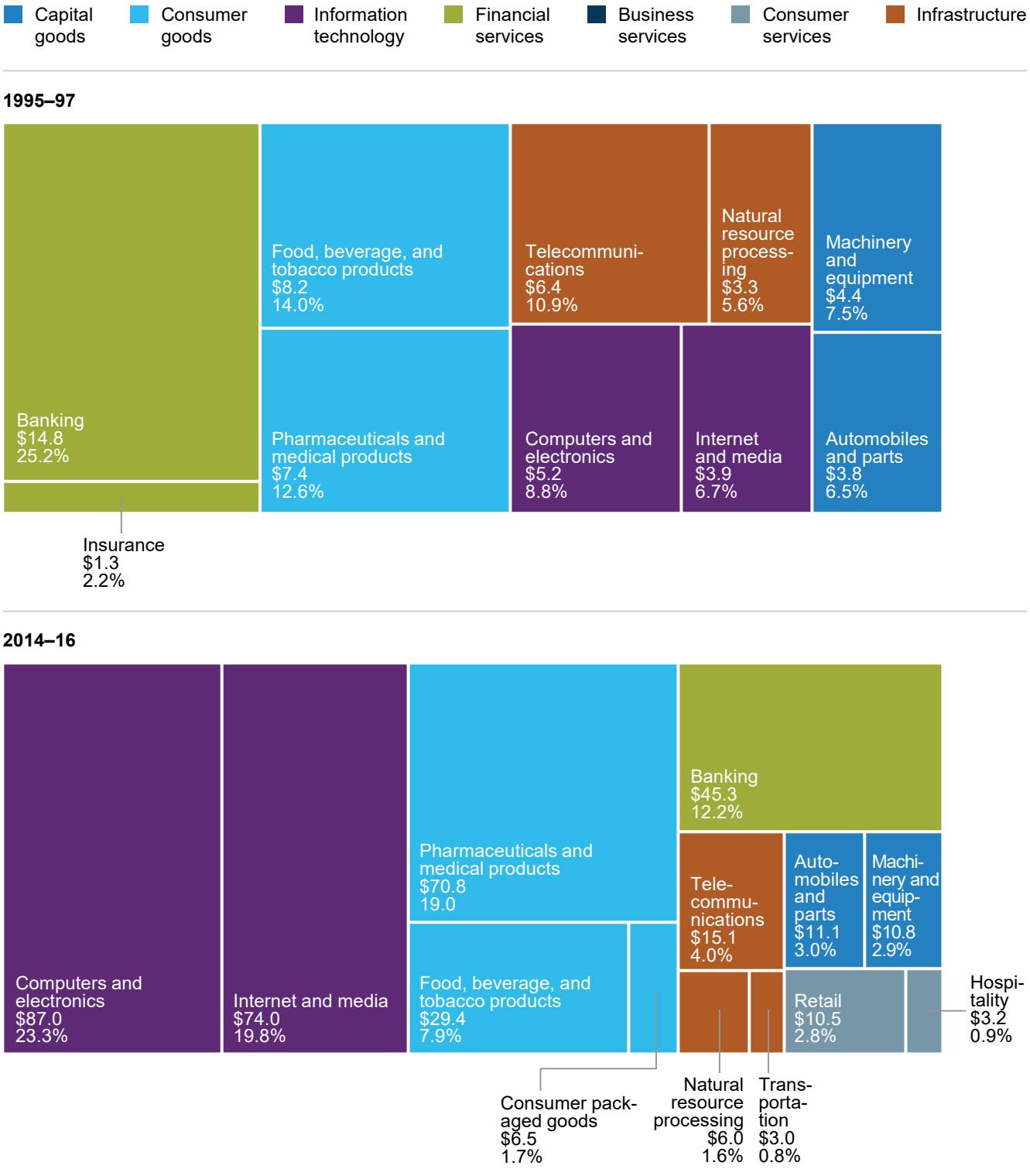
NOTE: Considers corporations with average sales of $1 billion or more (adjusted for inflation) to calculate economic profit in each time period. Sample sizes are 2,450 firms in 1995–97 and 5,750 firms in 2014–16.

SOURCE: McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

Exhibit 7 (continued)

Economic profit in the top 1% of the distribution goes primarily to consumer goods, information technology, and financial services firms.

Distribution of economic profit among top 1% of superstar firms by economic profit by sector
Aggregate economic profit by firm, $ billion, 3-year average
Share of the top 1% of economic profit, %



NOTE: Considers corporations with average sales of $1 billion or more (adjusted for inflation) to calculate economic profit in each time period. Sample sizes are 2,450 firms in 1995–97 and 5,750 firms in 2014–16.

SOURCE: McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

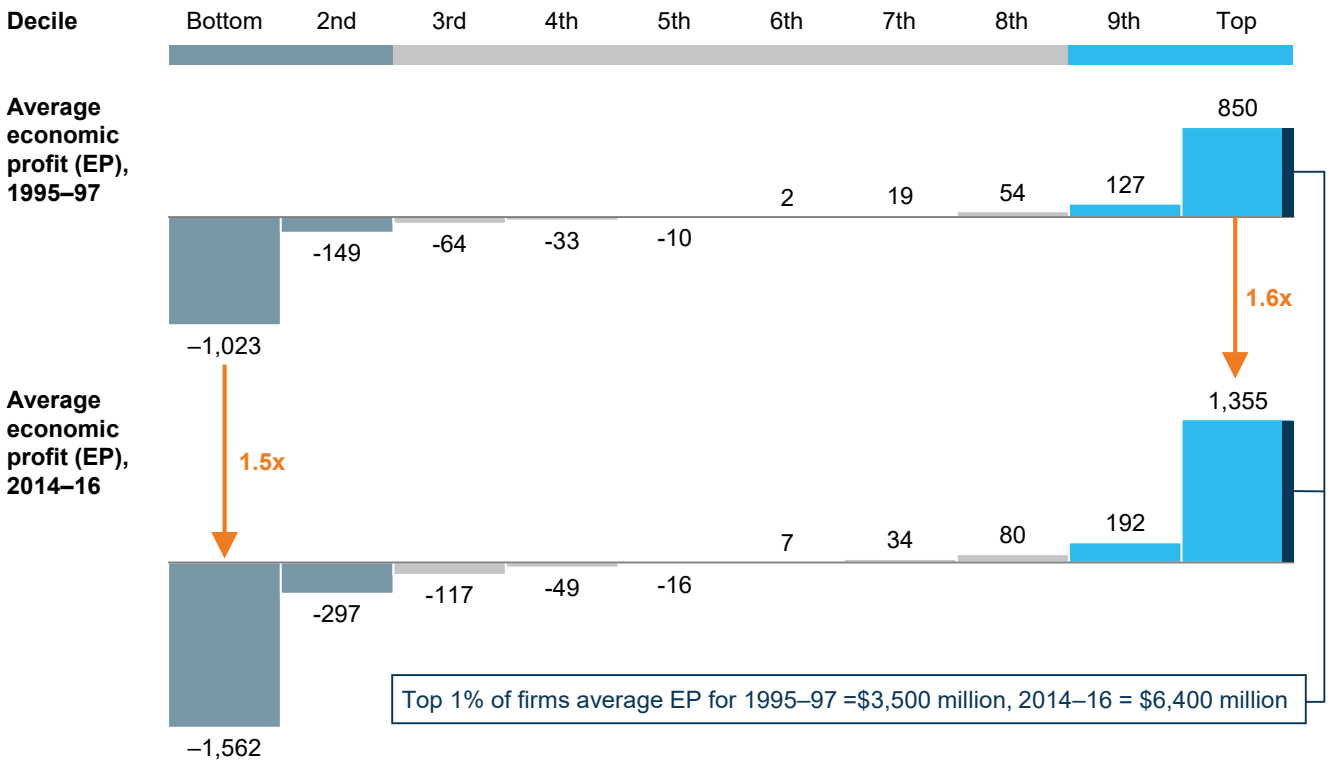
ECONOMIC PROFIT GAPS BETWEEN SUPERSTARS AND THE REST, AND BETWEEN THE BOTTOM 10 PERCENT AND THE REST, ARE WIDER VERSUS 20 YEARS AGO

The distribution of economic profit along a power curve has gotten more skewed over the past 20 years (Exhibit 8).[19] After adjusting for inflation, today's superstar firms have 1.6 times more economic profit on average than superstar firms 20 years ago. Today's bottom-decile firms have 1.5 times more economic loss on average than their counterparts 20 years ago. These patterns are repeated in every decile except the middle (sixth) decile.

Exhibit 8

The distribution of economic profit and loss has become more skewed over the past 20 years.

Average economic profit per firm in each decile of the economic profit distribution[1]
$ million (2016 dollars)



1 Considers corporations with average sales of $1 billion or more (adjusted for inflation) to calculate economic profit in each time period. Sample sizes are 2,450 firms in 1995–97 and 5,750 firms in 2014–16. Chris Bradley, Martin Hirt, and Sven Smit, *Strategy beyond the hockey stick: People, probabilities, and big moves to beat the odds*, Wiley, February 2018.

SOURCE: McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

Firms in the top 10 percent by economic profit account for a larger share of global revenue and profit now versus 20 years ago (Exhibit 9). They also make up a larger share of R&D spending. Relative to today's median large firm in our sample of nearly 6,000 large firms, today's superstars are 1.5 to 2 times larger in revenue and 1.5 to 2 times more profitable compared with 20 years ago. These trends are visible in nearly all sectors, particularly in finance, technology, and consumer goods.

Within this top 10 percent of firms that we identify as superstars, we find that the top 1 percent, the world's 58 largest economic value–adding firms, are even greater outperformers. These 58 firms account for 8 percent of global revenue and 36 percent of

[19] Chris Bradley, Martin Hirt, and Sven Smit, *Strategy beyond the hockey stick: People, probabilities, and big moves to beat the odds*, Wiley, February 2018.

economic profit. They are large even by the standard of median large firms, with 20 times more sales, four times higher profit margins (based on net income margin), and three times more investment in R&D than the median firm in our sample. The top 1 percent see a return on invested capital of 21 percent today, higher than 20 years ago.

Firms in the bottom 10 percent share many similar scale-related characteristics. Relative to the median firms, they are 7 times larger in revenue and 17 times larger in fixed assets. The bottom 10 percent includes firms from all regions and sectors, though firms from capital-intensive sectors such as natural resource processing, machinery and equipment, transportation, and utilities are overrepresented.

The gap between firms in the top and bottom 10 percent widened mainly in the first decade (from 1995–97 to 2004–06) of the 20-year period of our analysis. The economic profit curve became more skewed with firms in the top 10 percent in 2004–06 making two times more economic profit on average than firms in 1995–97. The gap widened because superstar firms grew their invested capital, with large increases in physical capital, and acquisition goodwill. Superstar firms in 2004–06 had twice as much invested capital on average compared with superstar firms in the previous decade. Their ROIC, however, remained about the same—indicating that the widening of the economic profit gap is driven by scale and high (but not increasing) returns.[20] Over the second decade, while the economic profit gap did not widen further, it remains wider than 20 years ago.

Over the past decade, nearly 20 percent of firms have risen from the bottom half of economic profit performance to the top half. They come from a variety of sectors, and include a number of machinery and equipment, distribution and logistics, and retail companies. In particular, North American and Japanese companies account for about one-third each of this set of firms that turned around their performance. A smaller set—10 percent of firms in the bottom decile of economic profit 10 years ago—moved all the way to the top decile during the business cycle. These companies are primarily from sectors such as machinery and equipment, transportation, and autos and parts, with North American firms accounting for about 50 percent of this population. The share of firms moving in this way from bottom ranks to top ranks has remained unchanged over the past 20 years even as the economic profit curve has become steeper.

In contrast to the firms that grew to superstar status over time, roughly 30 percent of firms in the bottom decile have stayed there for almost the entire business cycle or longer in some cases. Nearly one-fifth of firms in the bottom 10 percent by economic profit today have also fallen into the ranks of what have been called "zombie firms" in economic literature, unable to generate enough pretax earnings (measured as EBITA, or earnings before interest, tax, and amortization expenses) to sustain interest payments on their debt.[21] This is also a higher share than a decade ago, when 15 percent of firms in the bottom qualified according to this

[20] At first read, this may seem to contradict the evidence suggesting a runup in ROIC since 1990, at least for US publicly listed firms at the 90th percentile of ROIC. See, for instance, US Council of Economic Advisers, "Benefits of competition and indicators of market power," *Issue Brief*, April 2016 and *Playing to win: The new global competition for corporate profits*, McKinsey Global Institute, September 2015. However, the ROIC measure used in these papers excludes acquisition goodwill, which we include in this paper to account for increased M&A and intangible investments over the past two to three decades. See technical appendix for additional rationale. After incorporating acquisition goodwill, we find no increase in ROIC either among US publicly-listed firms or among our global sample of public and private firms. The role of intangibles in explaining the runup in ROIC is also highlighted in the findings of a recent World Bank research paper, which shows that "organic" intangible capital explains the widening gap in ROIC between top-performing firms and the rest. See Meghana Ayyagari, Asli Demirguc-Kunt, and Vojislav Maksimovic, *Who are America's star firms?* World Bank policy research working paper number 8534, July 2018.

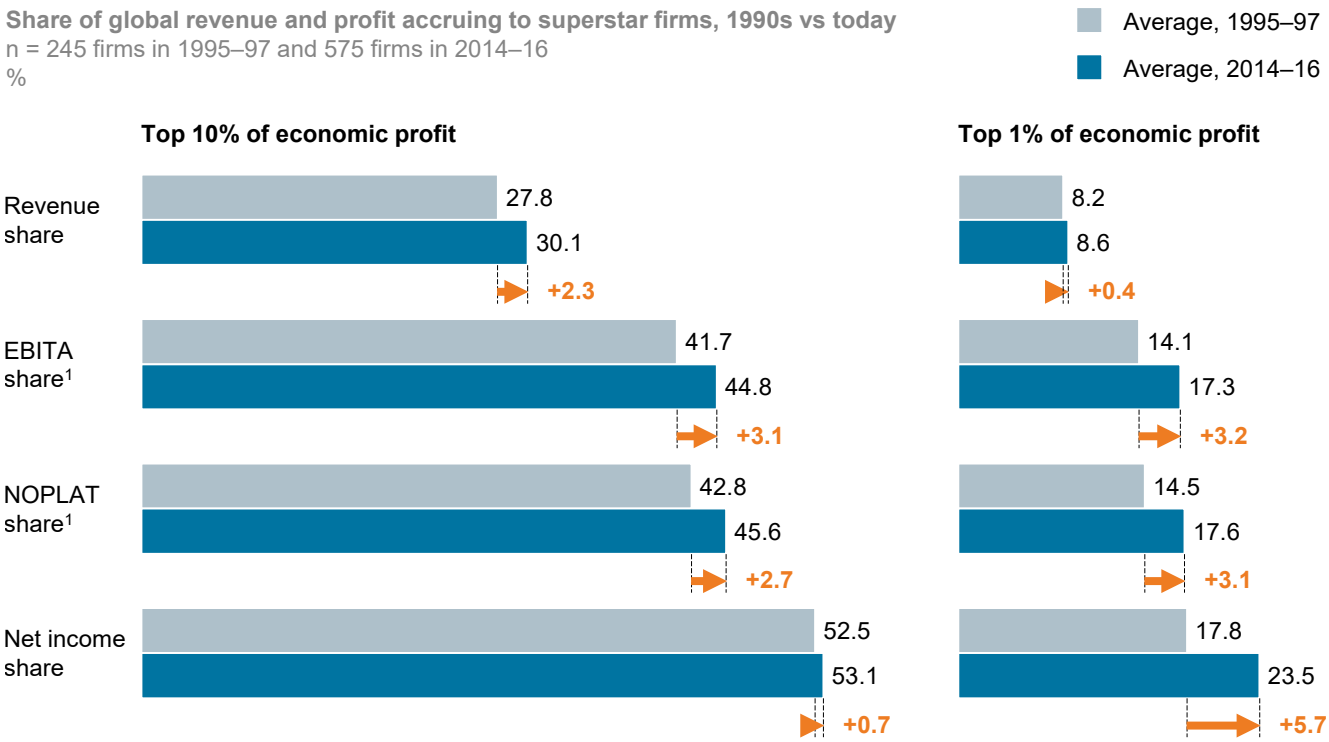
[21] Müge Adalet McGowan, Dan Andrews, and Valentine Millot, "The walking dead? Zombie firms and productivity performance in OECD countries," Economics department working papers number 1372, OECD, January 2017.

criteria. Compared with a decade ago, a larger share of firms is staying in the bottom decile and sustaining economic losses for a longer duration.[22]

Exhibit 9

Firms in the top 10 percent of economic profit today account for more revenue and net income than 20 years ago.

Share of global revenue and profit accruing to superstar firms, 1990s vs today
n = 245 firms in 1995–97 and 575 firms in 2014–16
%



1 Nonfinancial firms only. EBITA stands for earnings before interest, tax, and amortization. NOPLAT stands for net operating profit less adjusted taxes.

SOURCE: McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

NEARLY 50 PERCENT OF ALL SUPERSTARS FALL OUT OF THE TOP 10 PERCENT IN EVERY BUSINESS CYCLE, MANY OF THEM FALLING TO THE BOTTOM 10 PERCENT

Superstar firms continue to be displaced from the top 10 percent and the top 1 percent. Adjusting for the uptick in M&A activity since the early 1990s, nearly 50 percent of superstar firms in one business cycle drop out of the top 10 percent by economic profit in the next business cycle, suggesting that the superstar status remains contestable (Exhibit 10). Furthermore, superstar firms that fall from superstar status (out of the top 10 percent) tend to fall pretty far down. Among superstar firms that leave the top 10 percent in every business cycle, roughly 40 percent fall to the bottom 10 percent. In economic profit measure terms, this is due to the size of their invested capital base, which amplifies any decline in the returns to capital relative to the cost of capital. The top 1 percent is even more contestable, with two-thirds being new entrants to the top ranks in the last cycle. There is also some variation by geography, with superstar firms from emerging markets indicating higher churn rates of around 60 percent, compared with 40 percent for firms from developed markets.[23]

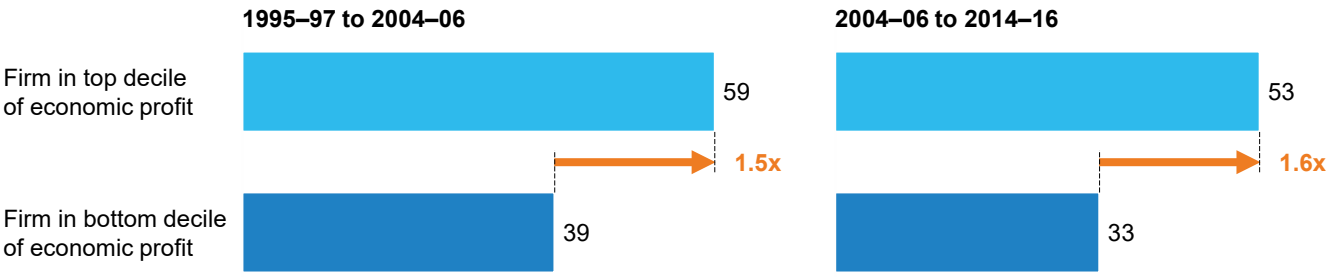
[22] Recent OECD research suggests that low interest rates and high exit and insolvency costs may be causing firms to sustain their economic losses and "zombie" status for a longer time. See Müge Adalet McGowan, Dan Andrews, and Valentine Millot, "Insolvency regimes, zombie firms, and capital reallocation," Economics department working papers number 1399, OECD, June 2017.

[23] *Outperformers: High-growth emerging economies and the companies that propel them*, McKinsey Global Institute, September 2018.

Exhibit 10

Nearly half of superstar firms fall out of the top 10 percent in each business cycle.

Likelihood of a firm retaining its decile position over one business cycle
%



SOURCE: McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

Overall, we find that contestability has remained about the same over the past 20 years. To put that in the context of the ongoing economic debate on corporate churn and staying power, we find no long-term change in the churn rate of firms.[24] However, we do find that successful firms are able to persist in the top 10 percent at higher rates than in other deciles; the persistence rate for firms in the bottom 10 percent, for instance, is 35 percent, compared with 68 percent for firms in the top 10 percent (Exhibit 11).[25] We also find that the longer superstars stay atop the pack based on their performance, the greater the likelihood that they will remain there. A cohort of firms that has survived the intense competition over two business cycles in the top 10 percent sees its persistence rate increase from 60 percent to 70 percent in the next cycle. Firms in the bottom 10 percent do not see a change in their persistence rate. There are also variations among firms from different sectors. Top-performing firms in brand-intensive sectors see a lower churn rate out of the top 10 percent, while the churn rate is higher for top 10 percent firms in construction, distribution, and capital goods sectors.

In the top 1 percent by economic profit, only one out of every six of today's superstar firms has been there for the past three decades. They are mostly American and European consumer goods and technology firms that have survived, often through reinvention and adaptation to a changing environment and sustained investment, and they own some of the world's most familiar brands.[26] They include Altria, Coca-Cola, Intel, Johnson & Johnson, Merck, Microsoft, Nestle, and Novartis. They are joined by several other firms that have stayed in the top ranks for two-thirds or more of the past 30 years and that come from a broader set of regions and sectors. These include firms such as Samsung, Toyota, and Walmart, and they make up another one-sixth of the top 1 percent.

[24] *Corporate longevity: Index turnover and corporate performance,* Credit Suisse, February 2017; Dane Stangler and Sam Arbesman, "What does Fortune 500 turnover mean?" Ewing Marion Kauffman Foundation, June 2012.

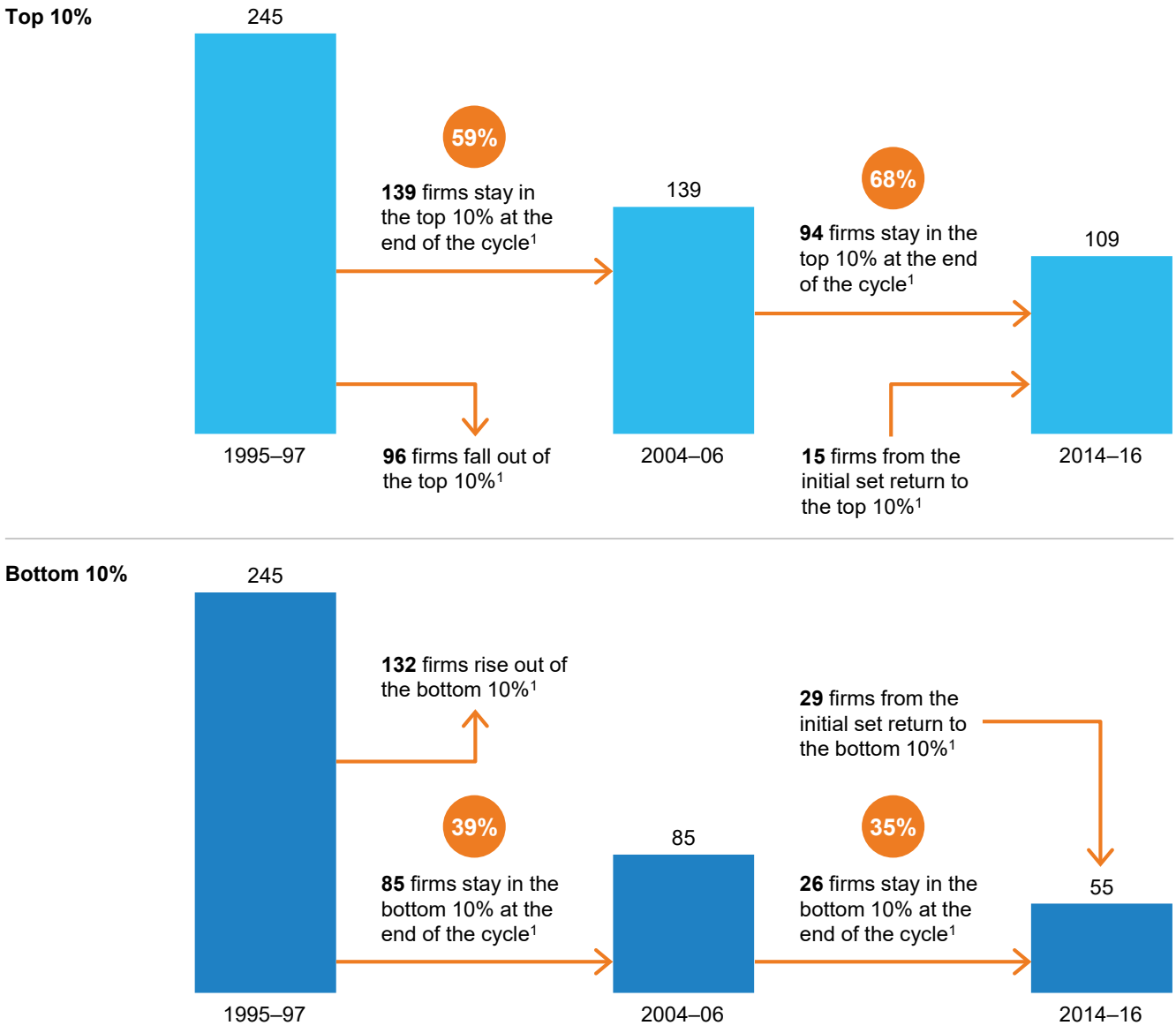
[25] The finding of higher persistence rates for top 10 percent firms is true even after adjusting for potentially lower survival rates for bottom-decile firms due to firm death or acquisition. Bottom-decile firms are acquired at higher rates than top-decile ones, for instance. Adjusted for the higher exit rates, the persistence of bottom-decile firms is equivalent to that of middle-decile firms, once we account for the fact that bottom-decile firms have only one direction in which to go (higher) while middle-decile firms can go in two possible directions (higher or lower).

[26] Best Global Brands 2017 Rankings, Interbrand.

Exhibit 11

The dynamics of entering, staying, and leaving the top and bottom deciles are an indication of continuing competitive churn.

Persistence of a top- and bottom-decile cohort over two business cycles
n = 2,450 firms tracked over 20 years


Top 10%
245
59%
139 firms stay in the top 10% at the end of the cycle[1]
139
68%
94 firms stay in the top 10% at the end of the cycle[1]
109
1995–97
96 firms fall out of the top 10%[1]
2004–06
15 firms from the initial set return to the top 10%[1]
2014–16
Bottom 10%
245
132 firms rise out of the bottom 10%[1]
29 firms from the initial set return to the bottom 10%[1]
39%
85
35%
85 firms stay in the bottom 10% at the end of the cycle[1]
26 firms stay in the bottom 10% at the end of the cycle[1]
55
1995–97
2004–06
2014–16

1 In every cycle, some firms drop out of the sales cutoff of $1 billion annual (2016 dollars), merge with another firm, or are acquired and go private. As a result, the total number of firms starting in one period may not equal the total number of firms shown transitioning between periods.

SOURCE: McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

The remaining two-thirds of the top 1 percent has seen significant churn, as firms are propelled to the top ranks because of broader economic forces as well as breakthrough performance and investment-led innovation. In the mid-2000s, for instance, the top 1 percent by economic profit included several mining and oil and gas firms that benefited from the onset of the global commodity supercycle. They have been displaced by new superstar firms that emerged in the past five to ten years, most notably from the technology sector and from China. These new superstar firms include internet and technology giants such as Alibaba, Alphabet, Apple, Facebook, Oracle, and Tencent. Some of the new entrants are American or European biotech firms, and others are Chinese banks,

among the largest banks in the world.[27] They are mostly state-owned enterprises that benefit from low cost of funds, relatively low-cost channels to market, and a supportive regulatory environment.

As noted earlier, along with the churn at the top are the dynamism and movement from lower deciles of performance to higher deciles of performance. We found that 20 percent of firms moved from the bottom half of economic profit to the top half in each of the past two business cycles, showing that movement upward is possible.

SUPERSTAR FIRMS LEAD THE WAY IN R&D AND INTANGIBLE INVESTMENTS, AND IN GLOBAL FLOWS AND PRODUCTIVITY

Superstar firms are larger, more profitable, more innovative, more globalized, and more productive than their peers (Exhibit 12). Compared with the median firm in our sample of 5,750 large firms, they generate seven times more revenue and invest six times more in fixed capital. Firms in the bottom decile are even larger by some measures; while they also generate nearly seven times more in revenue, they invest 17 times more in fixed capital than the median large firm. Superstar firms capture 1.5 times more sales from outside their home region, with much larger differentials in tradable sectors. They outperform their peers on scale and operating performance, and on financial performance. We find their net income margin is twice that of the median firm, they make up 30 percent of employment in our sample, and they account for 53 percent of net income.

Relative to their number, superstar firms make disproportionate investments in intangible assets such as intellectual property, software, and brand value. Large firms make up the majority of private-sector R&D spending, and their share has increased over the past two decades. The Organisation for Economic Co-operation and Development (OECD) estimates that the 50 largest R&D spenders account for 40 percent of business R&D in North America, 55 percent in Germany and Japan, and even higher shares in some smaller advanced economies.[28] R&D investment is even more concentrated among superstar firms, which account for 70 percent of R&D in our sample. Their share has increased over the past 20 years. Superstar firms in the top 1 percent by economic profit are almost three times more R&D-intensive than median firms; 20 years ago, they were almost twice as R&D-intensive as median firms. In contrast, firms in the bottom 10 percent have only one-third the R&D intensity of median firms, and this declined sharply from 20 years ago when the bottom recorded R&D intensity of 1.2 times the median firm.

Superstar firms also play a larger role than their peers in trade and foreign direct investment. Research suggests that a relatively small number of large companies account for the majority of global trade.[29] The world's largest firms are also rapidly expanding their global investment and sales footprint. Over the past 20 years, for instance, the world's 100 largest firms ranked by foreign assets have increased their ratio of foreign sales to total sales from 55 percent to nearly 70 percent, and their foreign assets ratio even faster.[30] This trend is more marked among superstar firms, whose foreign sales ratio is nearly twice that of median firms in the sample. Their influence extends to local economies through their higher wages and purchases from local supply chains.

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27 The World's 100 Largest Banks, S&P Global Market Intelligence, April 6, 2018. Total assets are adjusted for pending M&A and divestiture activities and are taken on an "as reported" basis, with no adjustments made for differing accounting standards.

28 "Preliminary results from the OECD," microBeRD project, July 2017.

29 Andrew B. Bernard et al., "Global firms," *Journal of Economic Literature*, June 2018, Volume 56, Number 2.

30 *World Investment Report 2017: Investment and the digital economy*, UNCTAD, 2017.

Exhibit 12

Firms at the top, bottom, and median differ in terms of size, profitability, innovation, globalization, and productivity.

Performance of firms in top, bottom, and middle deciles of economic profit
Averages

		Firms by economic profit 20 years ago …	… and today
Size	**Annual revenues** $ billion, 2016 dollars	14.1 4.8x 2.9 17.9 6.1x 47.3 16.2x	22.0 6.6x 3.3 23.9 7.2x 67.5 20.0x
	Property, plant, and equipment stock $ billion, current market value	8.7 11.8x 0.7 5.5 7.5x 15.3 20.8x	19.9 17.1x 1.2 7.0 6.0x 20.6 17.7x
	Number of employees Thousand	46.6 3.6x 12.8 52.8 4.1x 113.5 8.9x	55.5 4.3x 12.8 67.0 5.2x 153.8 12.0x
Profitability	**Net income margin** %	1.7 0.5x 3.2 8.5 2.7x 9.8 3.1x	3.4 0.9x 3.8 10.1 2.6x 15.6 4.1x
	Return on invested capital (excluding banks) %	3.2 0.4x 8.2 15.5 1.9x 18.3 2.2x	3.4 0.5x 7.2 15.6 2.2x 21.0 2.9x
Innovation	**R&D intensity** R&D spend as % of revenue	3.8 1.22x 3.1 5.6 1.82x 5.4 1.73x	1.2 0.36x 3.4 7.0 2.03x 9.9 2.88x
Globalization	**Foreign share of total sales** %	30.5 1.45x 21.1 38.6 1.83x 39.7 1.88x	30.8 1.35x 22.8 36.8 1.61x 42.3 1.85x
Productivity	**Labor productivity** Revenue per full-time employee, $ million, 2016 dollars	0.27 1.17x 0.23 0.34 1.50x 0.40 1.72x	0.43 1.51x 0.28 0.34 1.22x 0.35 1.23x
	Fixed capital productivity Revenue per unit of net property, plant, and equipment	1.23 0.43x 2.87 2.87 2.32 0.81x 2.35 0.82x	1.10 0.38x 2.87 3.43 1.19x 3.28 1.14x

SOURCE: Capital IQ; McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

Superstar firms as a group are 20 to 25 percent more productive than median firms in terms of revenue per full-time equivalent worker. Firms in the bottom 10 percent of economic profit, interestingly, show even higher levels of labor productivity; they are 50 percent more productive than median firms (see Box 3, "Large firms and the productivity frontier"). This raises a question about the impact of labor productivity if unaccompanied by other investments in R&D and intangibles, and business performance transformation. The productivity gap between superstar and median firms is even more apparent in some sectors such as automobiles and parts, computers and electronics, and pharmaceuticals and medical products. Superstar firms are two to three times as productive as median firms from these sectors and top 1 percent firms are nearly four times more productive. In contrast, there is no productivity gap between superstar firms and median firms among retailers and manufacturers of consumer goods.

The productivity gap between superstar firms and median firms appears to have narrowed over the past 20 years even as the productivity gap has widened between median firms and firms in the bottom 10 percent of economic profit. Two decades ago, top 10 percent firms were 50 percent more productive than median firms, while top 1 percent firms were 72 percent more productive. One reason for the apparent productivity convergence is that median firms are more productive as a group than in the past. Median firms' productivity is 20 to 25 percent higher today compared with 20 years ago, driven mostly by capital-expenditure-intensive firms such as industrial chemicals producers, distribution and logistics providers, and capital goods manufacturers. A second reason is the displacement of large natural resource firms in the top 10 percent and top 1 percent by less productive newcomers from other sectors.

Despite these trends, a link remains between productivity growth and superstar returns in many sectors, suggesting its necessity. Among today's superstar firms that were also in the top 10 percent 20 years ago, three-quarters are more productive today than they were 20 years ago, and they come from a range of sectors. There are notable productivity gainers among technology firms, infrastructure providers such as telecom companies, and financial services firms such as banks and insurance companies. Declines in productivity over time in the rest of the cohort affect mostly consumer goods companies.

Box 3. Large firms and the productivity frontier

When it comes to the productivity frontier, size matters. The largest firms by revenue, regardless of whether they create or destroy economic profit, are more likely to be the most productive as a group compared with smaller firms. Across most sectors, the largest firms are 1.5 to 2 times more productive than median firms.

When economic profit is the lens, the productivity gap between top performers and everyone else appears to have narrowed. However, a different story emerges when examining productivity growth rather than economic profit. When large firms are ordered by their productivity growth rates (adjusted for producer price inflation) and sorted into quintiles, we find a large performance gap opening up between firms that are more productive and the others over the past 20 years (Exhibit 13). Over this period, median performers saw roughly 1 percent productivity growth (on the basis of compound annual growth rate) while top performers clocked in at over 5 percent.[1]

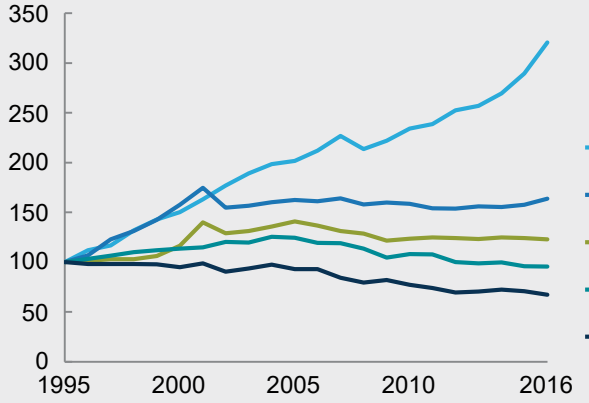
The gap has widened over two phases, roughly matching the two business cycles over the past 20 years. In the first phase, most firms, except those in the bottom quintile of 20-year growth, saw productivity growth. Median firms' productivity growth was nearly 3 percent, and the best performers' productivity grew twice as fast. In the second decade, productivity growth slowed across all quintiles, but the slowdown was more marked in the middle quintiles. Top-performing firms, mostly large technology and financial services firms, continued to grow at 4 percent, while median firms lost productivity at 1 percent a year. Previous MGI work analyzed two waves of productivity growth and decline that encompass these periods, pointing to the waning of an information technology–driven productivity boom, followed by the aftereffects of the global financial crisis, including weak demand and an uncertain environment for investment.[2]

The correlation between revenue size and productivity is positive, and the correlation has grown stronger over the past 20 years. However, the correlation coefficient is still low, and individual firms exhibit strong counterfactual evidence. Many large firms with substantial economic profit or revenue have low or declining productivity; many smaller firms have high or rapidly improving productivity. We also find no correlation between output growth and firm size.[3]

Exhibit 13

A large and growing gap has opened up between firms on the productivity frontier and others.

Labor productivity, 1995–2016
Quintiles based on 20-year productivity growth, measured as inflation-adjusted revenues per full-time equivalent worker[1]
$ per full-time equivalent worker indexed to 100 = FY1995 (n = 512)



	Growth (%)			Change in growth rate Percentage points
	Long term	1995–2006	2006–16	
Quintile 1	5.7	7.1	4.2	–2.8
Quintile 2	2.4	4.4	0.2	–4.2
Quintile 3	1.0	2.9	–1.1	–4.0
Quintile 4	–0.2	1.6	–2.2	–3.8
Quintile 5	–1.9	–0.7	–3.2	–2.5

1 Inflation adjustment for revenues at the firm level, based on output price index for each firm's primary sector and country/region of origin. For firms with more than 30% of revenues from outside their home region, deflator used is global output price index for the firm's primary sector of operation.

SOURCE: McKinsey Corporate Performance Analytics; Capital IQ; IHS; McKinsey Global Institute analysis

1 These findings are broadly similar to the conclusion of previous OECD research. See Dan Andrews, Chiara Criscuolo, and Peter N. Gal, "The best versus the rest: The global productivity slowdown, divergence across firms and the role of public policy," OECD productivity working papers number 5, November 2016.

2 *Solving the productivity puzzle: The role of demand and the promise of digitization,* McKinsey Global Institute, February 2018.

3 This suggests the affirmation of Gibrat's Law. Named after Robert Gibrat, it postulates that the output growth rate of a firm is independent of the absolute size of its output. It also suggests little evidence for Verdoorn's Law, named after Petrus Johannes Verdoorn, which postulates that in the long run there is a stable and positive causal relationship between a firm's output growth rate and productivity growth rate. If superstar effects were driven purely by massive economies of scale, Gibrat's Law might have been negated (larger firms would have grown faster) and Verdoorn's Law strongly affirmed (faster-growing firms would have seen rapid productivity growth). Instead we see that Gibrat's Law holds, and Verdoorn's Law is affirmed only weakly, if at all.

3. SECTORS

We find that within a universe of 24 sectors, economic gains are shifting rapidly to a handful in most major economies of the world. We identify these as superstar sectors, although as noted earlier, these sectors are not superstars in the same way that firms are.[31] In this section, we identify the superstar sectors, highlight their shared characteristics, and outline their net economic impact.

A HANDFUL OF SECTORS ARE SEEING SUPERSTAR GAINS IN GROSS OPERATING SURPLUS AND VALUE ADDED

We identify only a handful of sectors out of a total of 24 sectors as superstar sectors, though the "superstar" effect is not as strong compared with firms and cities. These superstar sectors include financial services (banking, insurance, and asset management), internet, media, and software, pharmaceuticals and medical products, professional services, and real estate. Outstripping others in terms of growth in gross operating surplus, these sectors represent an increasing share of national and global gross value added across major advanced and emerging economies. In contrast, infrastructure sectors, such as utilities, transportation, and natural resource extraction and development, together with capital goods and components manufacturing, as well as consumer goods manufacturing activities, are seeing slower growth rates and therefore are declining in share of gross value added in most regions.[32]

These relative changes in the value of some economic activities compared with others means that over the past 20 years among G-20 countries, roughly 9 percent of global private-sector gross value added, amounting to $5 trillion in 2017, and 12 percent of global private-sector gross surplus, amounting to $3 trillion in 2017, has been reallocated from slower-growing to faster-growing superstar sectors.[33] In large advanced economies, 9 to 13 percent of GDP has shifted to superstar sectors. In large emerging economies such as China and India, 20 to 25 percent of GDP has been reallocated to superstar sectors. Together these sectors account for 71 percent of the gain in GDP share and 72 percent of the gain in gross surplus share among G-20 countries over the past 20 years (Exhibit 14).

We also identify some superstar sectors that are unique to certain regions. They include, for instance, automobiles and parts production in China, Germany, Japan, and Korea; construction in China, India, and the United States; hospitality services in France, Italy, and the United Kingdom; and recently, resource production in the United States and Canada. The growth of these "local superstar sectors" reflects regional economic conditions that are hard to replicate globally. Examples include the fracking boom in North America over the past decade, rapid urbanization in China since the early 1990s, and German automobile export growth after the mid-1990s. Over the past two decades, these local superstar sectors account for 10 to 20 percent of the gain in GDP share within their national economies.

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31 See the technical appendix for more information on our methodology.

32 *Playing to win: The new global competition for corporate profits,* McKinsey Global Institute, September 2015.

33 This estimate is based on our definition of 24 sectors of the global private-sector economy. A more granular decomposition, for instance breaking out professional services into legal, scientific, technical, or other advisory services, is likely to result in even higher shares of reallocation. We settle on these 24 sectors because they are granular enough to be mutually distinct and show common patterns of input intensity that enable grouping into larger sector groups, yet are each individually large enough to have an easily observable effect at the aggregate global and national economy level.

Exhibit 14

Across most G-20 countries, a few sectors account for most of the growth in gross surplus and gross value added over the past 20 years.

%

	Change in gross surplus, 1995–2017	Share of gross surplus gains, 1995–2017	Change in gross value added, 1995–2017	Share of gross value added gains, 1995–2017
Internet, media, and software	60.0	10.0	45.9	13.1
Pharmaceuticals and medical products	43.1	3.7	42.9	3.7
Financial services (banking, insurance, and asset management)	23.4	22.4	13.8	10.6
Professional services	16.3	12.2	23.7	25.4
Real estate	12.3	23.4	12.9	17.9
Total for selected sectors		**71.7**		**70.7**

NOTE: Sector analysis is based on establishment-level data as reported in national accounts. Sectors are agglomerations of similar economic activities at establishments such as factories, retail stores, offices, and laboratories. Figures may not sum to 100% because of rounding.

SOURCE: IHS; World Input-Output Database; OECD; McKinsey Global Institute analysis

SUPERSTAR SECTORS SHARE SOME CHARACTERISTICS: FEWER FIXED CAPITAL NEEDS, MORE INTANGIBLE INPUTS, AND HIGHER LEVELS OF DIGITAL ADOPTION

We find that superstar sectors tend to share some combination of the following attributes: low capital intensity; greater intensity of R&D, of selling, general, and administrative expenses, and of skill; and higher levels of digital adoption (Exhibit 15). The development of pharmaceutical, medical, and technology products, for instance, requires five times more R&D inputs for each dollar of output than economic activities in other sectors. Superstar sectors tend to have fewer fixed capital assets (such as property, plant, and equipment inputs) and more intangible assets (such as brands, licenses, patents, and subscribers). Total labor inputs are 30 to 50 percent lower in superstar sectors such as pharmaceuticals and internet and media compared with sectors such as consumer goods. Skilled labor inputs are two to three times greater in financial and business services than in most other sectors; these differences are reflected in higher labor compensation inputs in superstar sectors.

The differences in factor intensity, especially capital and labor, between superstar sectors and the rest are important with respect to other dynamics in the economy. A key factor in discussions of sluggish productivity growth has been the very low growth in capital intensity in the economy over the past decade compared with previous decades.[34] This raises the

[34] *Solving the productivity puzzle: The role of demand and the promise of digitization,* McKinsey Global Institute, February 2018.

question of whether the low capital intensity of superstar sectors, and the slower-growing (or declining, in some cases) returns to capital-intensive sectors, has a bearing on the low growth in overall capital intensity in the economy.[35] The labor profile of superstar sectors is also interesting; they are relatively high-skill-intensive but have lower overall labor intensity than other sectors. This relative high-skill intensity can contribute to a widening wage gap between higher-skill and lower-skill workers. Combined with declining returns in labor-intensive sectors that account for most private-sector workers, it can also contribute to an overall decline in returns to labor. The impact of superstar sectors may thus be reflected in declining or slower-growing returns to both fixed capital and labor, with implications for long-term investment, productivity, and wage growth.[36]

Another common feature of many superstar sectors is their digital maturity in both advanced and large emerging economies. Internet and media activities are at the forefront of digital innovation, more or less by definition. Establishments that participate in these activities are also at the forefront of digital adoption, measured by digital investment and by their ability to digitize internal business processes and their links to customers, workers, and suppliers. Banking and professional services are also among the earliest and fastest-digitizing sectors over the past 20 years in most regions.[37] In superstar sectors, the digital maturity gap between large and small firms is smaller than in sectors that are declining as a share of the economy.

Some superstar sectors also tend to have more regulatory restrictions, and those regulations have increased over the past 20 years. For instance, pharmaceuticals and medical products and banking have seen sector-relevant restrictions increase by two to three times in the United States in the past 20 years, greater than all other sectors except healthcare and utilities.[38] The group of superstar sectors excluding real estate—that is, financial services, professional services, internet and media, and pharmaceuticals and medical products—together account for 25 to 30 percent of all the sector-specific regulatory restrictions in the United States today.

A longer view that compares the past two decades shows that the gross operating surplus dynamics of sectors have changed over time. In the 1980–95 period, for instance, gross operating surplus grew rapidly across G-20 countries, and 12 percent of the surplus share was reallocated from slower-growing to faster-growing sectors—a similar percentage to the 1995–2017 period. But the reallocation was broader-based in the 1980–95 period, with many more sectors benefiting from the surplus growth across many more G-20 countries, compared with the 1995–2017 period in which gross operating surplus gains were limited mainly to a few and relatively more standout superstar sectors. Similarly, the growth of gross value added was also broader-based across sectors in the 1980–95 period compared with the 1995–2017 period.

[35] *Playing to win: The new global competition for corporate profits,* McKinsey Global Institute, September 2015.

[36] Simcha Barkai, "Declining labor and capital shares," New working paper series number 2, Stigler Center for the Study of the Economy and the State, University of Chicago Booth School of Business, November 2016.

[37] *Digital America: A tale of the haves and have-mores,* McKinsey Global Institute, December 2015; *Digital Europe: Pushing the frontier, capturing the benefits*, McKinsey Global Institute, June 2016; *Digital China: Powering the economy to global competitiveness,* McKinsey Global Institute, December 2017.

[38] Based on analysis of RegData industry-specific restrictions in the United States. For further information, see Patrick A. McLaughlin, and Oliver Sherouse. RegData US 3.1 Annual (data set), QuantGov, Mercatus Center at George Mason University, Arlington, VA, 2018 (quantgov.org/regdata-us/).

Exhibit 15

Superstar sectors share attributes: more intangible and skill inputs, higher levels of digital adoption, and lower fixed capital inputs.

Superstar sectors

Sector group	Sector	Share of private-sector GDP in G-20 countries 2017, %	Intensity of inputs[1] R&D inputs	SG&A inputs	Skilled labor inputs	Digital maturity[2]	Labor inputs	Net PP&E	Invested capital
			Low ▯▯▯ High						
Capital goods	Automobiles and parts	1.7							
	Fabricated components	4.3							
	Industrial chemicals	1.4							
	Machinery and equipment	3.6							
Consumer goods	Apparel and luxury	1.2							
	Consumer packaged goods	0.2							
	Food, beverage, and tobacco products	6.9							
	Pharmaceuticals, medical products	1.1							
Information technology	Computers and electronics	1.6							
	Internet, media, and software	3.2							
Financial services	Asset management	1.2							
	Banking	4.7							
	Insurance	1.6							
	Real estate	11.7							
Business services	Construction	6.6							
	Distribution and logistics	7.1							
	Professional services	10.0							
Consumer services	Healthcare	6.7							
	Hospitality	4.2							
	Retail	6.4							
Infrastructure	Natural resource processing	4.6							
	Telecommunications	2.0							
	Transportation	5.2							
	Utilities	2.9							

1 For information about each input and how it is calculated, please see the technical appendix.
2 Refer to MGI's Industry Digitization Index. See *Digital America: A tale of the haves and have-mores*, December 2015; *Digital Europe: Pushing the frontier, capturing the benefits*, June 2016; and *Digital China: Powering the economy to global competitiveness*, December 2017.
NOTE: Sector analysis is based on establishment-level data as reported in the national accounts. Sectors are agglomerations of similar economic activities done at establishments such as factories, retail stores, offices, and laboratories.

SOURCE: McKinsey Corporate Performance Analysis Tool; IHS; US Bureau of Economic Analysis; US Bureau of Labor Statistics; World Input-Output Database; OECD; McKinsey Global Institute analysis

As a result of these broad-based gains, fewer sectors stood out as superstar sectors in the 1980–95 period, and even then, only weakly versus other sectors. Some sectors gaining share of gross value added and gross operating surplus during the 1980–95 period include recent superstar sectors such as pharmaceuticals and medical products, real estate, and professional services. But many labor-intensive and capital-intensive sectors also saw gains during the same period, including services sectors such as healthcare and hospitality and manufacturing sectors such as automobiles and parts, computers and electronics, industrial chemicals, and consumer packaged goods. As a result, in the 1980–95 period, gains accrued to sectors with many forms of factor intensity—ranging from labor and capital to R&D and skill—whereas recent gains to superstar sectors have benefited some input factors more than others.

SUPERSTAR SECTORS TYPICALLY GENERATE HIGHER RETURNS TO CAPITAL, AND THE RESULTING GAINS TEND TO BE MORE GEOGRAPHICALLY CONCENTRATED

Income gains in superstar sectors typically accrue to gross operating surplus, a measure of corporate and capital income (for instance to debt holders, homeowners, and business proprietors) rather than to labor compensation. In declining sectors, meanwhile, the income decline is felt disproportionately by workers in those sectors. As a result, in the United States for example, gross operating surplus share of GDP has increased by 3.3 percentage points over the past 20 years at the expense of labor share of GDP (Exhibit 16). The United States is not alone in seeing these trends. Among advanced economies in the G-20 group of countries, gross operating surplus has increased by one to two percentage points of GDP over the past 20 years in Australia, Canada, Germany, and Japan. Gross operating surplus has also increased in emerging economies such as China (ten percentage points), Saudi Arabia (four percentage points), and South Africa (two percentage points) over the same period.

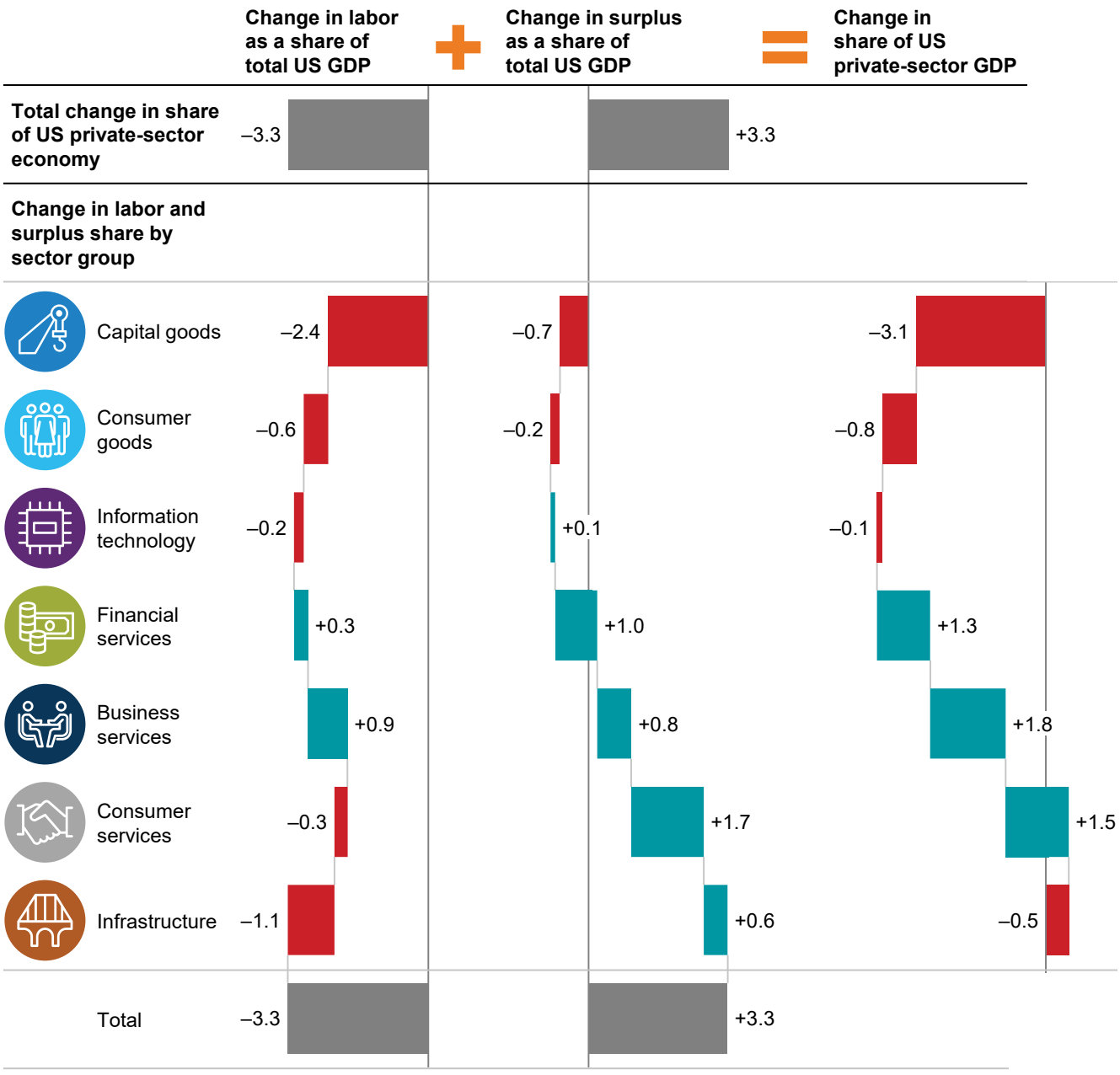
Superstar sectors have significantly greater geographic concentration in the largest urban areas (Exhibit 17). In contrast, the activities of declining sectors are spread over a wider geographic footprint encompassing large and small cities and rural areas. The ability of other cities and towns to participate in superstar sectors' gains is limited, because superstar sectors have a small geographic footprint in terms of sector specialization. For instance, in the United States, gains that accrue to internet and media activities are concentrated in just 10 percent of counties, which account for 90 percent of GDP in that superstar sector. Only 6 percent of US counties specialize in internet and media activity, and 13 to 15 percent of counties in banking and professional services. In contrast, declining sectors are the main economic activities in 50 to 70 percent of US counties (Exhibit 18). These differences in footprints mean that although some superstar sectors have more domestic sourcing and stronger multiplier effects on economic growth than declining sectors, their direct GDP and employment effects tend to be far more localized.

Superstar sector gains in gross value added accrue primarily to gross operating surplus. Where labor gains do occur, they are driven by wage gains to high-skill workers, with weak employment gains. For instance, wage gains to existing workers account for 70 to 85 percent of labor gains for US workers in internet and media and in pharmaceuticals and medical products. Strong wage gains and weak employment gains indicate that labor gains primarily go to already-employed workers in these superstar sectors. Sectors with large employment gains, such as healthcare and hospitality, have seen flat or declining wages over the past 20 years. Meanwhile, among sectors in relative decline, such as infrastructure and manufacturing, the relative losses in share of gross value added result primarily in losses to the labor share of GDP in those sectors—and they affect large numbers of low- to medium-skill workers. In declining sectors, the loss of labor share is reflected primarily in employment losses, while wages have generally remained unchanged over the past 20 years.

Exhibit 16

Shifts in gross value added and gross surplus tend to benefit capital more than labor.

Change, 1997–2015
24 sectors aggregated into 7 sector groups, private-sector economy
%



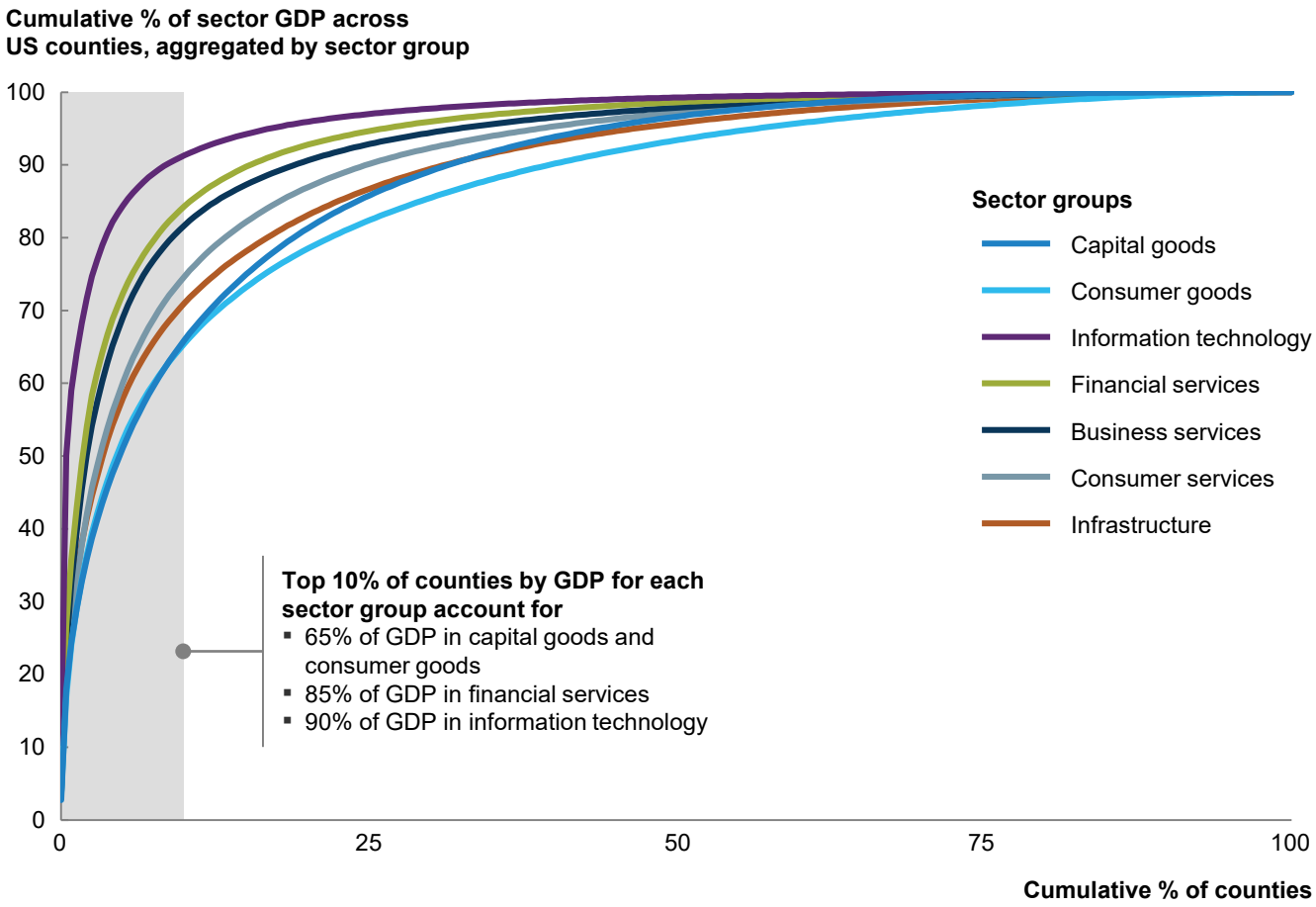
NOTE: Sector analysis is based on establishment-level data as reported in the national accounts. Sectors are agglomerations of similar economic activities done at establishments such as factories, retail stores, offices, and laboratories. Figures may not sum to 100% because of rounding.

SOURCE: IHS; OECD; McKinsey Global Institute analysis

Exhibit 17

In the United States, superstar sectors such as information technology and financial services are highly localized compared to sectors that are declining as a share of the economy.

Geographic footprint of a sector's economic activity



NOTE: Sector analysis is based on establishment-level data as reported in the national accounts. Sectors are agglomerations of similar economic activities done at establishments such as factories, retail stores, offices, and laboratories.

SOURCE: US Bureau of Economic Analysis; US Census Bureau; McKinsey Global Institute analysis

Exhibit 18

In the United States, superstar sectors' income gains benefit a few counties while relative declines are more widespread.

Geographic footprint of sector specialization
% of US counties with location quotient >1.0 in a sector, and indicator of sector gain or decline in share of gross surplus[1]

▼	**Capital goods**	**52.8**
▼	Fabricated components	56.4
▼	Machinery and equipment	37.6
▼	**Consumer goods**	**70.0**
▼	Food, beverage, and tobacco products	75.3
▲	Pharmaceuticals and medical devices	17.5
▲	**Information technology**	**6.2**
▲	**Financial services**	**13.7**
▲	Asset management	3.7
▲	Insurance	14.4
▲	**Business services**	**15.7**
▲	Professional services	8.5
▲	Distribution and logistics	38.9
▼	**Consumer services**	**44.0**
▼	Retail	55.6
▲	Healthcare	39.1
▼	**Infrastructure**	**54.1**
▼	Utilities	58.9
▼	Transportation	48.5

1 The location quotient measures the share of a city's economy in one sector, relative to the share of the country's economy in that sector. A location quotient greater than 1.0 indicates that the city has more activity in that sector (relative to its total economy) than the country as a whole.
NOTE: Sector analysis is based on establishment-level data as reported in the national accounts. Sectors are agglomerations of similar economic activities done at establishments such as factories, retail stores, offices, and laboratories.

SOURCE: US Bureau of Economic Analysis; US Census Bureau; McKinsey Global Institute analysis

In superstar sectors, gains to capital are not to fixed property, plant, and equipment but to R&D, software, and real estate (in the form of imputed rents, an estimation of unrealized wealth to homeowners). These gross gains do not directly translate to higher cash flows for holders of capital; 30 to 50 percent of gross operating surplus gains are depreciated away, mainly due to the accelerated nature of software and R&D depreciation. Depreciation has increased from one to six percentage points of GDP in most regions, and it eats away 35 percent of gross operating surplus gains in China, nearly 50 percent in the United States, and most of the gains in European countries. Therefore, while US labor has lost GDP share equivalent to roughly three percentage points of GDP over the past 20 years, net surplus to capital holders has increased by about one-and-a-half percentage points of GDP.

4. CITIES

Using our defining metric for cities that includes GDP and personal income per capita, we identify 50 global superstar cities. These superstars are from both developed and emerging economies. Many are global centers of finance, business, and technology and innovation. Additionally, based on similar metrics, we identify 75 "regional superstar" cities that play a key role in their country or region and could become the global superstars of tomorrow. Many of these superstar cities and regional cities are pulling away from the pack due to both increasing labor income and increasing wealth from dividends and real estate. In this section, we identify these superstar cities and examine what is fueling their growth and what impact they are having.

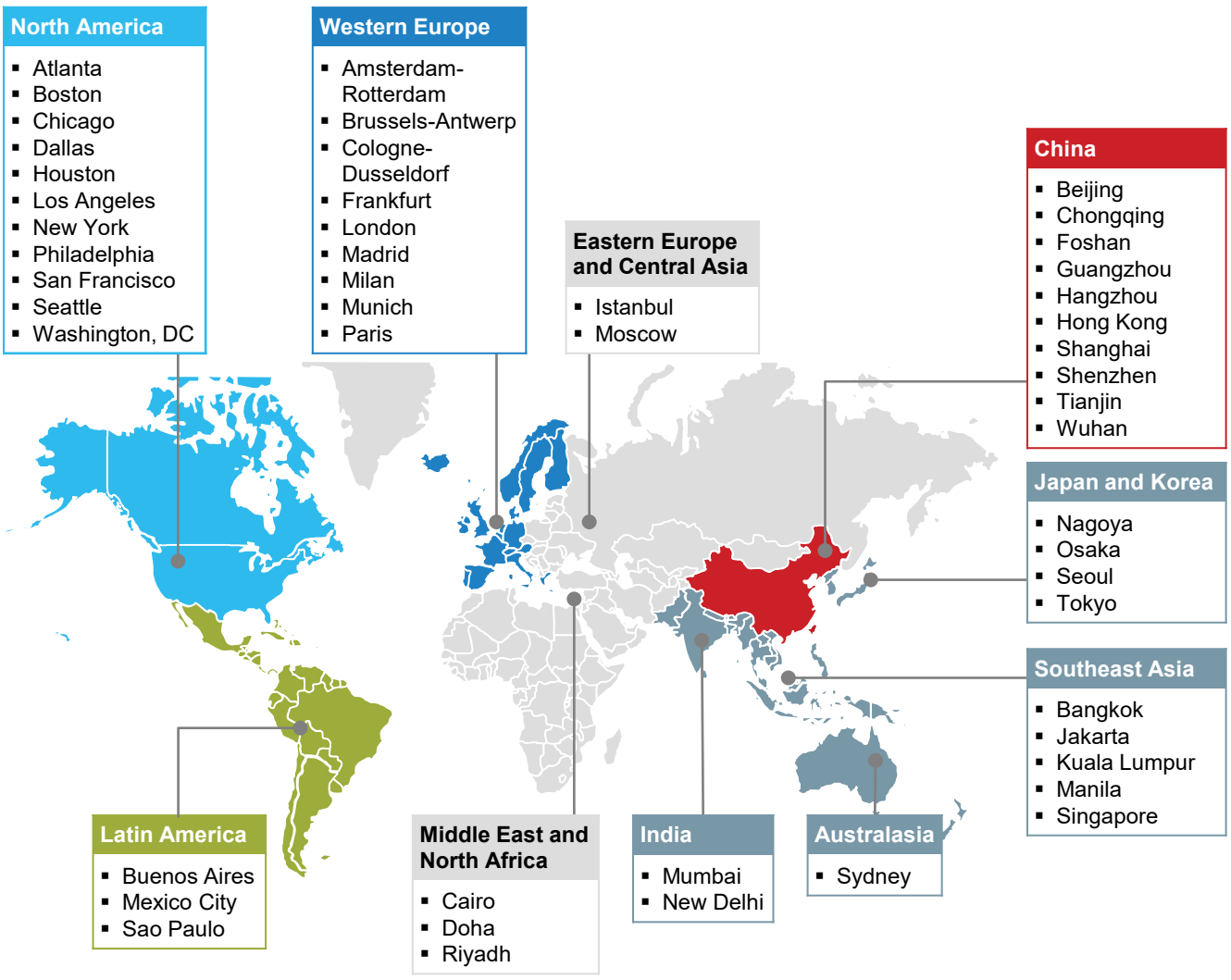
FIFTY SUPERSTAR CITIES ARE 21 PERCENT OF WORLD GDP AND ARE PULLING AWAY FROM THEIR PEERS IN GROWTH OF GDP PER CAPITA AND SHARE OF WORLD GDP

We start with 3,000 of the world's largest cities with populations of at least 150,000 and $125 million PPP-adjusted GDP.[39] Together they represent 67 percent of world GDP and 40 percent of population. From that group, we identify 50 cities that are superstars by our definition. These account for 8 percent of the world's population yet generate 21 percent of global GDP. They include cities such as Boston, Cairo, Frankfurt, Kuala Lumpur, London, Manila, Mexico City, Mumbai, New York, Shenzhen, Sydney, and Tianjin (Exhibit 19).

In addition to these 50 global superstar cities, we identify nearly 75 regional hubs. These cities are smaller but play the same role within their country or region, and they could become global economic hubs in the future. They include cities such as Abu Dhabi, Chengdu, Lagos, Melbourne, Nairobi, Rio de Janeiro, and San Diego. They make up 5 percent of the world's population but contribute nearly twice as much to world GDP.

Exhibit 19

50 global superstar cities are outpacing peer cities in terms of their per capita GDP growth and contribution to global GDP.



NOTE: The maps displayed on the MGI website and in MGI reports are for reference only. The boundaries, colors, denominations, and any other information shown on these maps do not imply, on the part of McKinsey, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries.

SOURCE: McKinsey CityScope; McKinsey Global Institute analysis

[39] See the technical appendix for more details about our methodology.

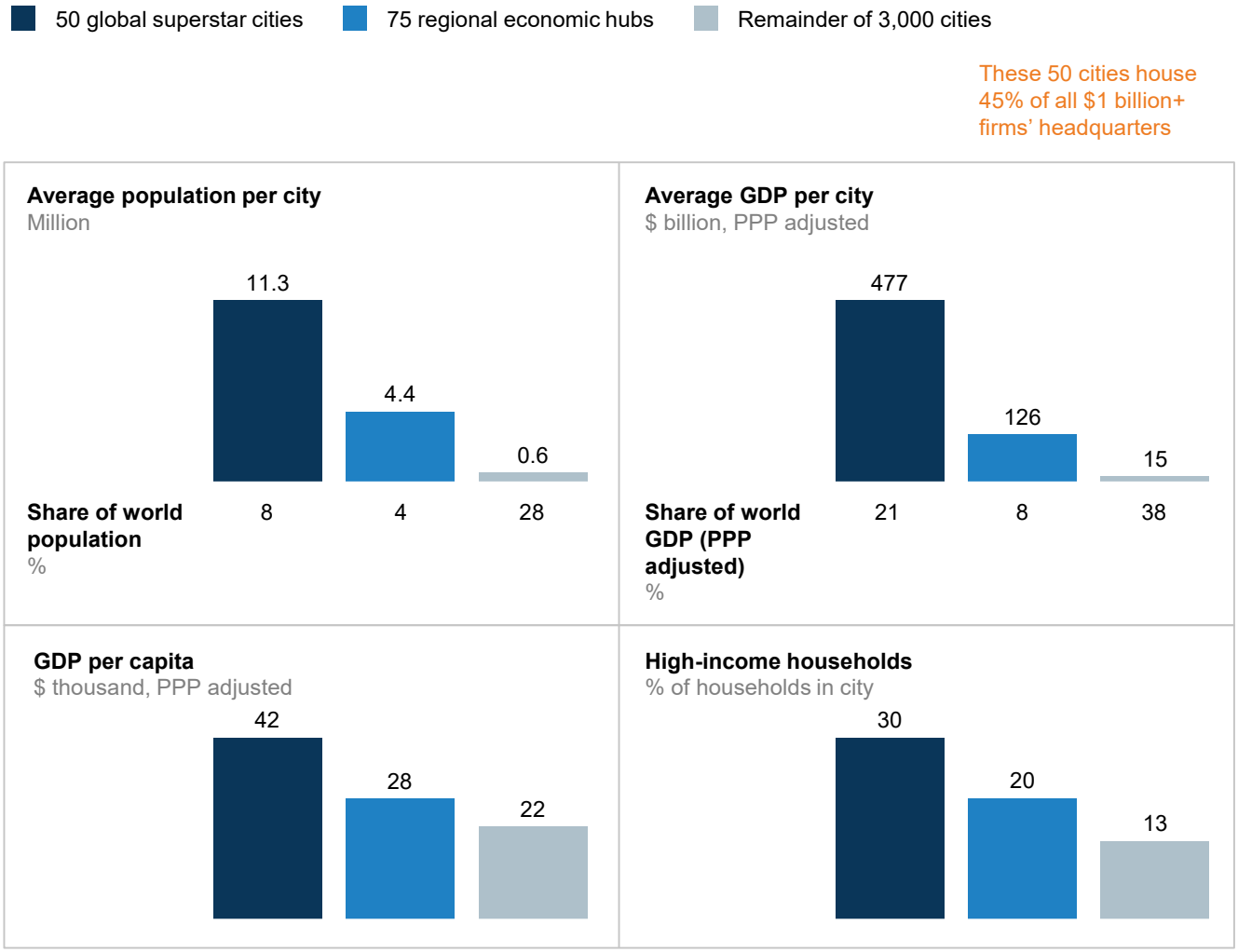
These global superstar cities and regional economic hubs outperform their peers on GDP per capita and contribution to global GDP. The average GDP per capita in these cities is $42,000, about twice that of the global urban average (Exhibit 20).

Exhibit 20

Global and regional superstar cities have higher GDP per capita and more high-income households and corporate headquarters than peer cities.

Geographic concentration of economic activity

Of the 3,000 largest cities in the world by population …



SOURCE: McKinsey CityScope; McKinsey Global Institute analysis

Superstar cities ten years ago had 30 percent higher per capita GDP relative to their peer cities in the same region and income group. Today that gap is wider; their per capita GDP is 45 percent higher than their peers'. In the past decade, the largest gains in per capita GDP, relative to regional peer cities, have occurred in superstar cities from emerging-markets such as Jakarta, Manila, and Mumbai. These cities, along with Beijing, Kuala Lumpur, Shanghai, and Tianjin, are among the fastest-growing contributors to global GDP (in PPP-adjusted terms). Thanks to a combination of population growth and per capita GDP growth, the largest emerging-market superstar cities have increased their individual contribution to global GDP by 30 to 40 percent in just the past decade.

These trends are also evident in some superstar cities in advanced economies. Cities such as Boston, Seattle, Singapore, and Sydney have made substantial gains in per capita GDP relative to their peers over the past decade. Combined with strong population growth, these cities have increased their share of world GDP by 20 to 30 percent over the past decade.

Superstar cities have different trajectories of economic and population growth, though they all outperform their peer cities in the same region and of the same size and income level. Within our group of 50 superstar cities, for instance, we can identify three different groups based on their income and population growth trajectories (Exhibit 21). Roughly half of superstar cities are steadily pulling away from their peers in terms of per capita GDP and are seeing strong population growth. This group includes Boston, Hong Kong, London, Manila, Moscow, and New York. The cities in the second group, a subset of the first group that includes Jakarta, Singapore, and Wuhan, are rapidly pulling away, and are posting exceptionally strong income and population growth. The cities in the third group, the other half, are seeing a slight narrowing of the per capita GDP gap combined with strong population growth relative to their region. This group includes Beijing, Buenos Aires, Cairo, Doha, and Shanghai. Several superstar cities, even those that are not city-states, stand out in that they make up a disproportionate and in many cases growing share of their country's GDP; examples include Buenos Aires, Cairo, London, Manila, and Moscow.

Changes in the trajectories of superstar cities result in some cities churning out of the group while new entrants find their place. Over the past decade, for instance, we find a 25 percent churn rate among superstar cities as some advanced-economy cities such as Rome, San Diego, and Vienna have been displaced by emerging-market cities such as Jakarta, Kuala Lumpur, and New Delhi, that have stronger income and population growth trajectories relative to their peers in the same region and income group.

Exhibit 21

Three groups of superstar cities emerge based on their trajectory of income and population growth.

Subset of 50 superstar cities in 2015, selected to highlight 3 emerging groups

	City	Country	Population Million	Share of country population %	PPP-adjusted GDP $ billion	Share of country GDP %	GDP per capita $	Relative per capita GDP Index[1]	Change in per capita GDP 2007–15, %	Change in population 2007–15, CAGR, %
Established superstar cities steadily reinforcing their lead	Boston	United States	4.8	1.5	374.0	2.1	78,427.2	1.4	9.9	0.7
	Hong Kong	China	7.3	0.5	412.3	2.2	56,374.8	1.3	6.1	0.6
	London	United Kingdom	14.4	22.3	897.1	37.3	62,210.5	1.5	10.1	0.1
	Manila	Philippines	12.8	12.6	275.1	36.9	21,420.3	1.6	9.8	1.3
	Moscow	Russia	12.4	8.7	822.4	23.8	66,321.3	2.2	–0.3	2.1
	New York	United States	20.2	6.3	1,463.1	8.2	72,448.4	1.3	4.6	0.8
	San Francisco	United States	4.7	1.4	355.5	2.0	76,303.0	1.4	–1.1	1.3
Superstar cities rapidly pulling away from peers	Jakarta	Indonesia	10.3	4.0	453.4	16.0	44,020.3	3.3	62.4	1.6
	Mumbai	India	19.5	1.5	340.2	4.7	17,404.2	1.7	22.9	–1.5
	Riyadh	Saudi Arabia	5.7	18.9	458.0	27.5	80,961.5	1.2	28.8	3.1
	Singapore	Singapore	5.6	100.0	470.6	100.0	83,744.8	1.9	23.0	2.9
	Wuhan	China	10.6	0.8	287.2	1.5	27,034.7	1.2	30.6	2.8
Superstar cities rapidly expanding their population	Beijing	China	22.0	1.6	683.0	3.7	31,022.4	1.4	–21.6	4.7
	Cairo	Egypt	17.6	20.8	355.3	35.9	20,161.7	1.2	–2.1	6.4
	Doha	Qatar	1.5	64.8	249.7	72.1	164,021.3	2.4	–14.0	11.1
	Guangzhou	China	12.4	0.9	486.1	2.6	39,278.6	1.8	–27.0	5.6
	Shanghai	China	25.6	1.8	800.6	4.3	31,261.3	1.4	–30.6	4.9
	Shenzhen	China	11.6	0.8	475.2	2.5	40,949.4	1.8	–17.4	3.3

1 Index measures the per capita GDP of a city relative to other cities of the same income level and region. Cities are classified into similar groups based on the World Bank's classification of their countries by income and region.

SOURCE: McKinsey CityScope; McKinsey Global Institute analysis

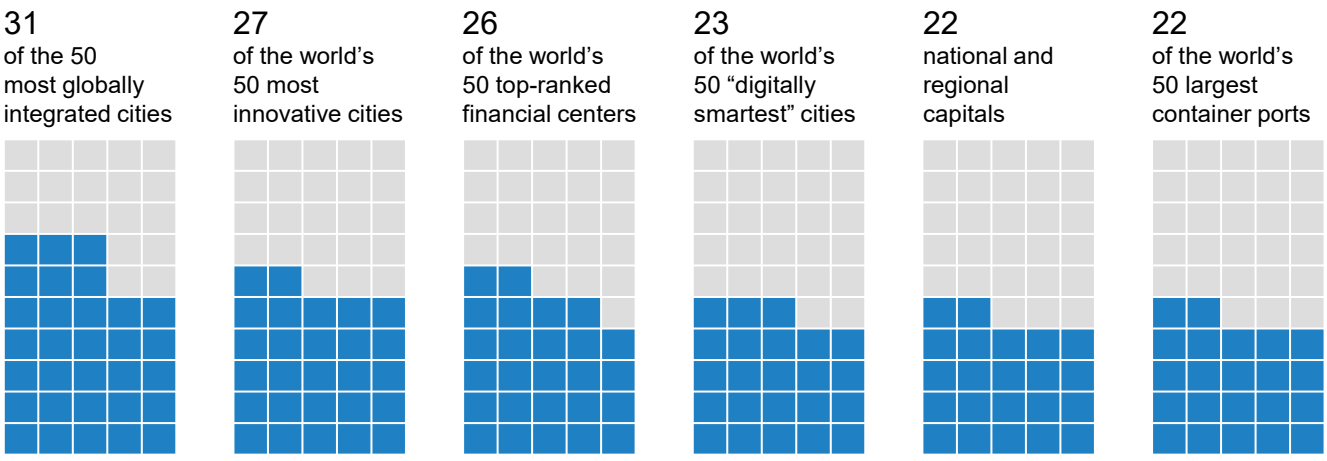
SUPERSTAR CITIES ARE OFTEN GLOBAL HUBS OF FINANCE, BUSINESS, GOVERNMENT, AND GATEWAYS TO TRADE, FINANCE, DATA, AND TALENT FLOWS

Superstar cities share certain characteristics in addition to their economic size and per capita incomes. They are hubs of global governance, finance, technology, and innovation (Exhibit 22). For instance, among the 50 global superstar cities, 44 percent are national capitals, with 12 acting as seats of national government for G-20 member countries; they include Buenos Aires, Moscow, and Paris. Fifty-two percent are hubs of global finance, including well-known financial centers such as London, New York, and Singapore; 17 of the top 20 global financial centers are among the 50 global superstar cities.[40] In a recent ranking of the world's most innovative cities, 16 of the top 20—including Boston, San Francisco, and Tokyo—are global superstar cities.[41]

Exhibit 22

Superstar cities tend to be among the most globally integrated and innovative cities, top financial centers, digitally advanced, national and regional capitals, and the world's largest ports.

Among the 50 global superstar cities are …



NOTE: See technical appendix for more detail.

SOURCE: Globalization and World Cities Research Network, 2016; Global Financial Centres Index, Long Finance, March 2018; World Shipping Council; Innovation Cities Index, 2016 to 2017, 2thinknow; Airports Council International; McKinsey Global Institute analysis

The economic outperformance of global and regional superstar cities is matched by their role in the global economy in other ways. The 50 global superstar cities are the headquarters for 45 percent of large companies. Superstar cities are also hubs of innovation, accounting for 70 percent of multinational firms' R&D investment and generating an equally high share of the world's scientific publications.[42]

Superstar cities also play a critical role in connecting the global web of economic activity, serving as gateways of cross-border trade, finance, people, and data flows.[43] Among the world's 20 busiest container ports by volume, for instance, more than half are in global superstar cities, including the four largest: Hong Kong, Shanghai, Shenzhen, and Singapore. Many of the other large container ports are in regional superstar cities, such as Busan and Hamburg. Superstar cities are also home to nearly all of the world's 20 largest

40 *The Global Financial Centres Index 23*, Financial Centre Futures, Long Finance, March 2018.
41 *Innovation Cities Index 2016–2017: Global,* 2thinknow.
42 *Smart cities: Digital solutions for a more livable future,* McKinsey Global Institute, June 2018.
43 *Global flows in a digital age: How trade, finance, people, and data connect the global economy*, McKinsey Global Institute, April 2014.

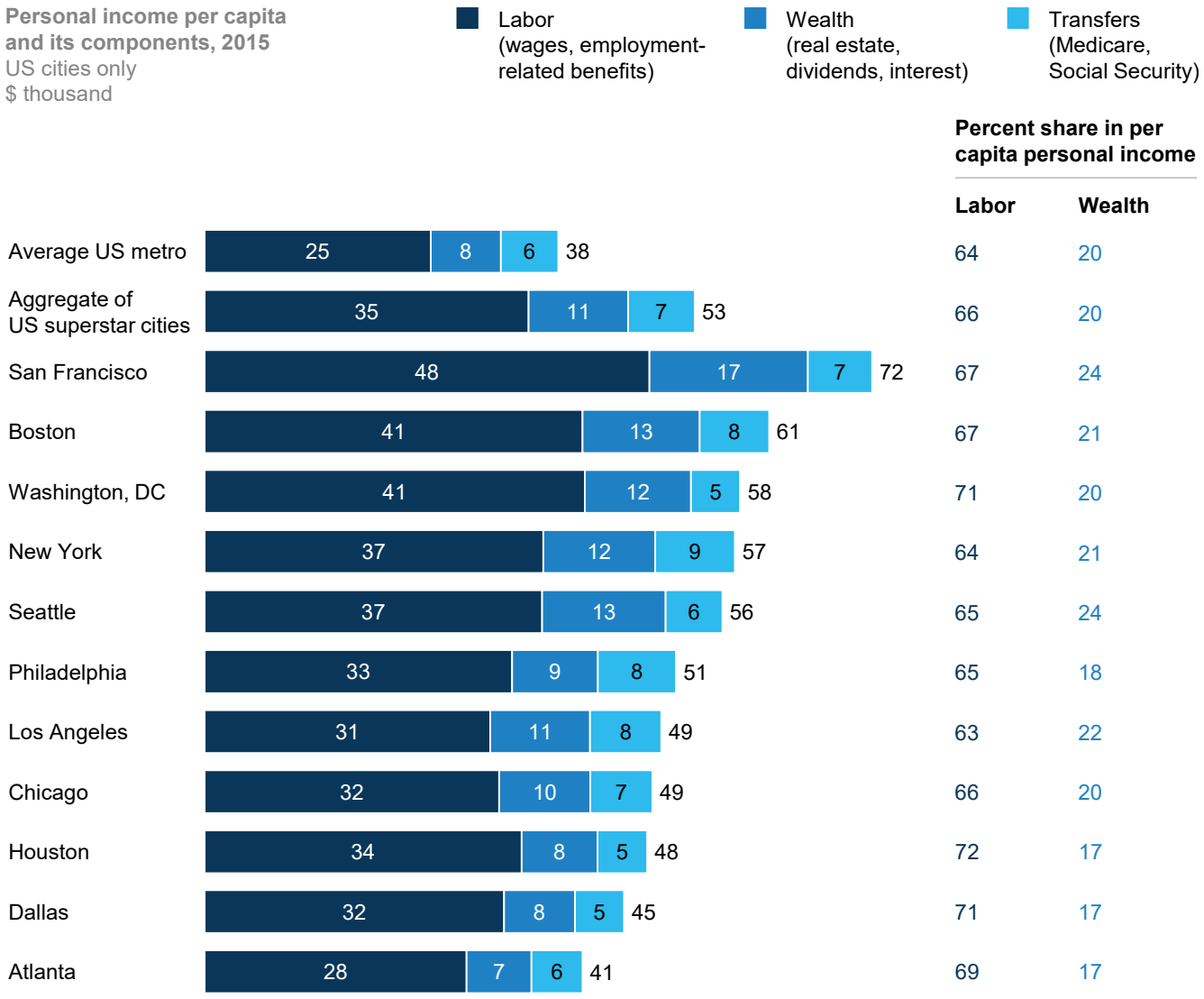
passenger and cargo airports, measured by traffic volume. The global connectedness of these superstar cities is also evident in the foreign-born share of their populations. Among the 20 largest cities with more than one million foreign-born residents, 85 percent are global superstar cities.

SUPERSTAR CITIES' FASTER PER CAPITA INCOME GROWTH IS FUELED BY GROWTH IN LABOR INCOME AND WEALTH

Superstar cities are economic growth engines. Higher levels of growth in labor income and wealth gains relative to median cities from real estate, dividend, and investment income fuel the increasing income of superstar cities. In the United States, for instance, we find 11 superstar cities (Exhibit 23). These superstars outperform the average US metropolitan area on GDP per capita. Wages plus benefits are a higher share of per capita income in these cities than in peer cities. Capital income from dividends, interest, and real estate gains is also a higher share in superstar cities than in peer cities. Transfers are a lower share, implying that these cities act as economic engines that benefit other cities.

Exhibit 23

Superstar cities' high per capita income is fueled by increasing labor income and wealth from gains in real estate, dividends, and interest income.


Personal income per capita and its components, 2015
US cities only
$ thousand
Labor (wages, employment-related benefits)
Wealth (real estate, dividends, interest)
Transfers (Medicare, Social Security)
Percent share in per capita personal income
Labor
Wealth
Average US metro 25 8 6 38 64 20
Aggregate of US superstar cities 35 11 7 53 66 20
San Francisco 48 17 7 72 67 24
Boston 41 13 8 61 67 21
Washington, DC 41 12 5 58 71 20
New York 37 12 9 57 64 21
Seattle 37 13 6 56 65 24
Philadelphia 33 9 8 51 65 18
Los Angeles 31 11 8 49 63 22
Chicago 32 10 7 49 66 20
Houston 34 8 5 48 72 17
Dallas 32 8 5 45 71 17
Atlanta 28 7 6 41 69 17

NOTE: Figures may not sum to 100% because of rounding.

SOURCE: US Bureau of Economic Analysis; McKinsey Global Institute analysis

Over the past decade, the 11 American superstar cities are pulling away from other US cities due to both labor income and wealth effects (Exhibit 24). Wealth effects—from real estate, dividends, and interest income—appear to be the main driver in Chicago, Los Angeles, New York, and Seattle. Labor income appears to be the main driver in Washington, DC (contributing 72 percent of per capita GDP versus 56 percent for the average US city), Houston (65 percent), Dallas (65 percent), Atlanta (69 percent), and Philadelphia (65 percent). Both labor and wealth effects seem to contribute to per capita GDP growth in San Francisco and Boston. Transfer payments are also a contributing factor in Atlanta, Chicago, and Philadelphia.

Superstar effects among cities raise complex questions about whether the trend should be welcomed and even replicated by other cities. One set of questions is around the prospects of other large cities, smaller cities, and rural areas to become new superstar cities. Recent research has documented a stark divergence in income growth between some urban regions and others over the past 20 years, reversing decades of post-war income convergence.[44] These divergences tend to get sharper in recessions and recoveries. While economic downturns are broad-based across regions, recoveries—measured in job creation and new business creation—are increasingly concentrated in a few superstar cities.[45]

A second set of questions revolves around the extent to which firms, workers, and households can move to superstar cities and participate in the benefits of income growth and access to centers of technology, innovation, trade, governance, and finance. A few superstar cities are indeed outpacing their national economies in population growth even as they outstrip the nation on per capita GDP growth. In the United States, superstar cities seeing such relatively high population growth include Atlanta, Dallas, Houston, and Washington, DC. But most US superstar cities see much slower population growth compared with the US average, with the slowest-growing being Boston, Chicago, Los Angeles, New York, and Philadelphia.

A final set of questions is around the ability of superstar cities to ensure higher living standards for all their residents. The 11 American superstar cities we identify have among the highest levels of income inequality among cities in the United States—twice as high as some of the least unequal but non-superstar cities such as Provo, Ogden, and Salt Lake City.[46] Many emerging-market superstar cities are ranked among the most unequal cities in the world, and have the fastest-growing rates of income inequality over the past 20 years.[47] Among the world's ten most livable cities, only four are global or regional superstar cities by our definition, and they tend to be midsize cities. Many of the larger superstar cities, while still ranking within higher tiers of livability, are sometimes considered "victims of their own success" over concerns such as high crime rates, affordable housing, congestion, poverty traps, and high costs of living.[48] Cities with the highest worldwide cost of living, such as Hong Kong, Paris, Singapore, and Zurich, tend to be global or regional superstar cities.[49]

[44] Philip Longman, "Why the economic fates of America's cities diverged," *Atlantic*, November 28, 2015.

[45] *The new map of economic growth and recovery*, Economic Innovation Group, May 2016.

[46] Natalie Holmes and Alan Berube, *City and metropolitan inequality on the rise, driven by declining incomes*, Brookings Institution, January 14, 2016.

[47] *World cities report 2016: Urbanization and development*, *Emerging futures*," UN Habitat, 2016.

[48] *The global liveability index 2018*, Economist Intelligence Unit.

[49] *Worldwide cost of living report 2018*, Economist Intelligence Unit.

Exhibit 24

Superstar cities' per capita income is growing faster than in other cities, driven by strong labor income and wealth effects.

Change in personal income per capita in superstar cities, 1997–2015
US cities only

City		Personal income per capita, $ thousand, 1997	Personal income per capita, $ thousand, 2015	Personal income per capita CAGR, %	Contribution to change in personal income per capita, 1997–2015, %		
					Labor[1]	Wealth[2]	Transfers
US metro		38.3	38.3	**0**	56	19	25
					Multiple of US metro average, X		
Aggregate of US superstar cities		43.9	53.1	**1.1**	1.0	1.3	0.8
Driven by labor and wealth effects	San Francisco	51.8	72.3	1.9	1.1	1.4	0.4
	Boston	47.5	61.2	1.4	1.1	1.2	0.6
	Houston	39.4	48.0	1.1	1.2	1.1	0.6
Driven mainly by wealth effects	Los Angeles	38.3	49.5	1.4	0.9	1.5	1.0
	Seattle	44.3	56.1	1.3	1.0	1.5	0.5
	New York	48.1	57.5	1.0	1.0	1.4	0.8
	Chicago	43.2	48.5	0.6	0.9	1.2	1.2
Driven mainly by labor effects	Philadelphia	41.6	51.1	1.1	1.1	0.7	1.0
	Washington, DC	49.1	58.0	0.9	1.3	0.8	0.6
	Dallas	39.7	45.5	0.8	1.2	1.0	0.6
	Atlanta	39.6	40.9	0.2	1.1	0.9	0.9

1 Wages and employment-related benefits.
2 Dividends, interest, and imputed rent and realized rent from real estate.
NOTE: Figures may not sum to 100% because of rounding.

SOURCE: US Bureau of Economic Analysis; McKinsey Global Institute analysis

5. A SUPERSTAR ECOSYSTEM?

We find several common characteristics shared across superstar firms, sectors, and cities and regional hubs, as well as some linkages between them. Though there is churn among their ranks, superstars tend to have more staying power than peers (this being strongest among superstar cities), are more globalized and more digitized, and have greater knowledge intensity and more intangible assets. For example, superstar firms get 1.6 times more revenue from outside their home region compared with peers. Superstar cities have historically been (and continue to be) gateways for global flows of trade, finance, and people, while superstar sectors see significant cross-border M&A flows. In another example, sectors such as finance, tech, and business services are the most digitally mature.[50] Some superstar firms have relatively high digital intensities, even though they may be outside the superstar sectors.[51] Many superstar cities are tech centers and gateways for cross-border digital flows. Finally, superstar sectors and firms tend to have relatively lower labor and fixed capital inputs than peers; higher investments and costs in R&D and higher costs of selling, general, and administrative expenses; and higher high-skill labor inputs.

There are several patterns and linkages between superstar firms, sectors, and cities that may be reinforcing a superstar trend, raising the possibility of a "superstar ecosystem" effect. This could have significant implications for the economy. For example, if superstars are increasing their lead, that could entrench an economy in which some are left behind. In previous research, we identified gaps in the digitization of firms between digital "haves" and "have-mores"; the gap could expand with the advent of AI-related technologies for which digital maturity and large data sets are prerequisites.[52] Yet other gaps to do with financing, geography, and intangible assets exist, making it harder for firms outside of this ecosystem to learn from and catch up with superstars. At the same time, some superstar sectors have more domestic sourcing, including from smaller firms, and also have stronger multiplier effects on economic growth than declining sectors. At this stage, however, these apparent linkages and others between superstar entities and the possibility of a superstar ecosystem and its potential implications require further study before we can fully understand the economic implications. But for now, some initial findings on possible linkages include:

- A possible link between superstar sectors and superstar firms, where superstar sectors see growth in gross operating surplus that goes primarily to corporations at the expense of labor, proprietors of unincorporated (and usually small) businesses, and governments. The growth of superstar sectors and their gross operating surplus has mainly benefited corporations, which have increased their share of world GDP while the share of labor has declined. Corporate surplus has increased from 19 percent to 22 percent of world GDP over the past 20 years. Financial firms have benefited the most in the United States and China; nonfinancial firms in Japan and eurozone countries. As corporate gross operating surplus has increased, the relative share of sole proprietors and governments in gross operating surplus has declined.

- Another link between superstar sectors and superstar firms, where some sectors seem to predict superstar firms, but only when sector gains go to gross operating surplus. Yet declining sectors see compelling exceptions to this link among some superstar firms (Exhibit 25). Superstar sectors where gains in gross value added accrue mostly to gross operating surplus, such as technology and internet and finance, appear to be good predictors of superstar firms. For instance, technology, internet, and media firms have increased their share of economic profit from 11 percent to 16 percent over the past 20 years, even as total global economic profit across all sectors has tripled. In contrast,

[50] *Digital America: A tale of the haves and have-mores,* McKinsey Global Institute, December 2015.

[51] Tanguy Catlin, Jay Scanlan, and Paul Willmott, "Raising your digital quotient," *McKinsey Quarterly*, June 2015.

[52] *Digital America: A tale of the haves and have-mores,* McKinsey Global Institute, December 2015; *Digital Europe: Pushing the frontier, capturing the benefits*, McKinsey Global Institute, June 2016.

superstar sectors where gains in gross value added go to labor, such as professional services, see far fewer superstar firms. Yet there are differences among declining sectors. Many capital goods and consumer goods sectors are declining in share of gross value added, yet they have superstar firms that persist and are growing even larger. In contrast, infrastructure sectors' relative decline is borne by the largest firms, which have rapidly fallen out of the top 10 percent by economic profit. This raises questions about the relationship between superstar firms and sector structure and performance.

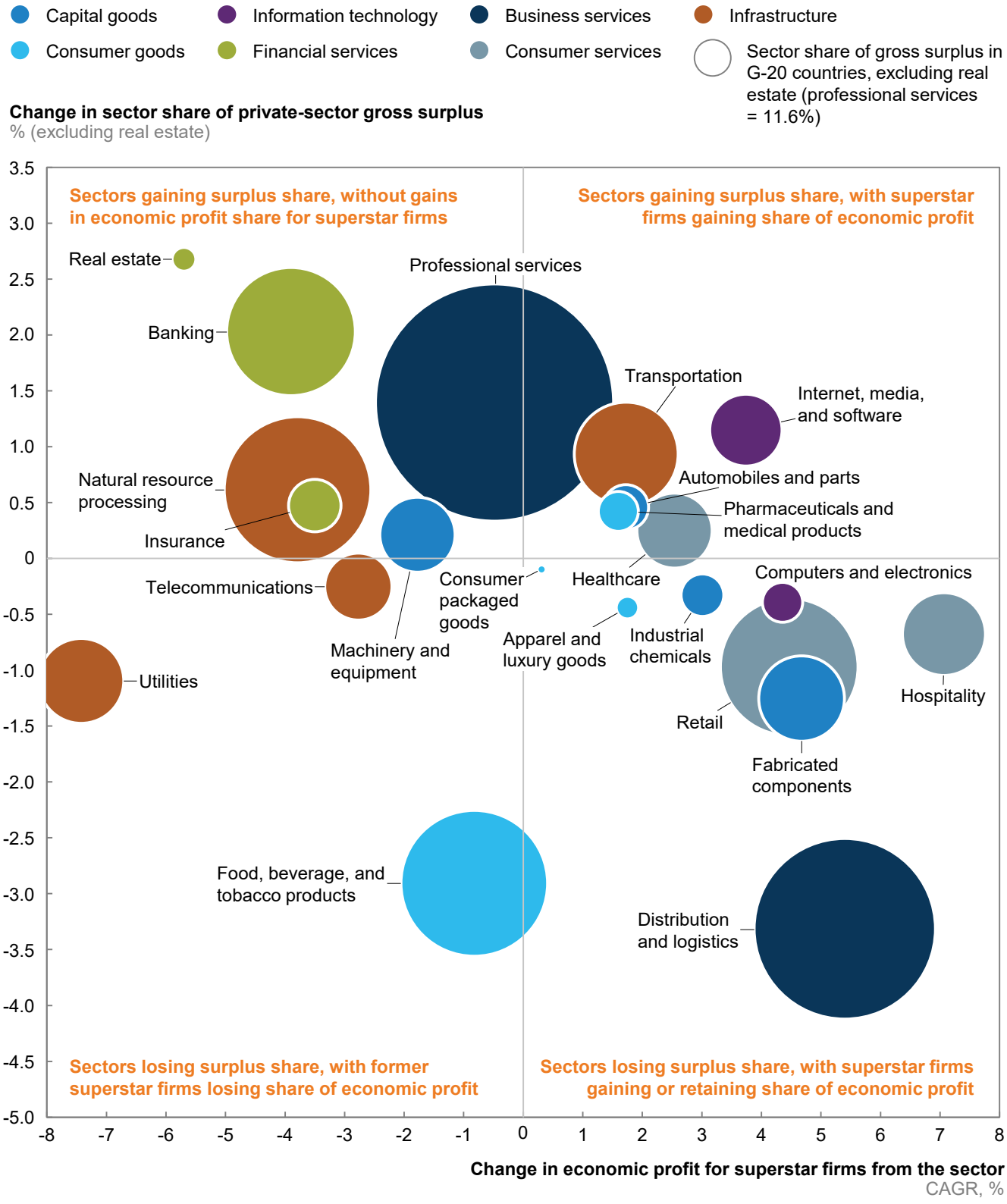
- A link may also exist between superstar firms, sectors, and cities that may lead to geographically concentrated labor income and wealth gains, mainly driven by gains in real estate, in superstar cities. Nearly half of the world's large corporations with revenues above $1 billion have headquarters in one of the 50 global superstar cities. The higher productivity level of these firms compared with median firms, and their higher wages, are reflected in higher labor income in these cities. This is particularly true for firms from superstar sectors such as technology, business services, and finance, in which sector gross value added is concentrated in a few cities. In contrast, declining sectors such as infrastructure, capital goods, and consumer goods, and the firms affected by the decline, are more geographically dispersed across many more cities and counties (in the case of the United States). These geographic trends may be reinforced by real-estate wealth effects. Among the five sectors that have gained in share of gross value added, the real estate sector stands out, accounting for 15 to 25 percent of the total increase. These gains have fueled a strong wealth effect in superstar cities that have seen large increases in wealth for property owners in the form of imputed rents. Home prices have grown faster in these cities than elsewhere. In the United States, for instance, the highest and fastest-growing median home prices are found in Boston, Los Angeles, New York, San Francisco, and Seattle—all superstar cities with strong wealth effects driving rapid per capita GDP growth.

- A link can also be observed between superstar firms, sectors, and cities where superstar sectors' gross operating surplus and superstar firms' economic profit translate to dividends that reinforce concentrated wealth gains in superstar cities. Superstar cities are home to 8 percent of the world's population, but they account for nearly 37 percent of the world's urban high-income households which make up most of the global investor class. As corporate surplus has grown, dividends paid to investors have increased in most regions over the past 20 years. Dividends have grown (as a share of GDP) by 3.5 percentage points in the United States, 4 points in France, and 1 to 2 points in China, Japan, and Korea. Meanwhile, with an increasing number of companies being taken private, along with growth in buybacks and M&A (all of which can remove equity listings from the public market), there has been a decline in net equity issuance that has concentrated the dividends and shareholder value within a smaller group of institutional and retail investors. These investors are four times more likely to be in these superstar cities compared with the general population.

Exhibit 25

There is a link between a superstar sector and superstar firms from that sector, for example in pharmaceuticals and medical products, and internet, media, and software—but not in all sectors.

Change in sectors' gross surplus and firms' economic profit aggregate of G-20 countries
1995–97 to 2014–16



NOTE: Sector analysis is based on establishment-level data as reported in the national accounts. Sectors are agglomerations of similar economic activities done at establishments such as factories, retail stores, offices, and laboratories.

SOURCE: IHS; OECD; McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

6. PRELIMINARY IMPLICATIONS

While more research is needed to understand the reasons behind the rise of superstars, their implications for their peers, the dynamics in their respective ecosystems, and the net effect on their national economies as well as on the global economy, we find preliminary insights relevant now to both companies and policy makers.

COMMON FEATURES OF SUPERSTAR FIRMS AND THEIR DYNAMICS, INCLUDING THEIR CONTESTABILITY, OFFER LESSONS FOR BUSINESS LEADERS

The superstar performance among firms is real as shown in the economic performance distribution (Exhibit 3). But while the gap is growing between superstars and others, the superstar status is contestable. Indeed, the degree of competitive churn has not changed over the past two business cycles despite superstar firms capturing more economic profit from the pool for which firms compete. While our research into what drives the emergence and growth of superstar firms is incomplete, some lessons can already be learned. Here we not only draw on the findings in this paper, but also build on previous McKinsey research that shows how firms can move up the power curve of economic profit by leveraging endowments, capitalizing on global trends, and making big moves that include programmatic M&A and dynamic capital reallocation.[53] Such lessons include:

- **It is easy to fall from the top and possible to rise to the top.** Success brings greater reward than in the past, but it is no more likely to persist. Half of companies fall from the top decile, and 40 percent of those that fall drop to the bottom. At the same time, challengers and competitors have the same prospects as in the past of displacing top-decile firms. Indeed, a few bottom-decile firms have shown that it is possible to get to the top. The dynamism shown by these firms remains critical to success, especially in a competitive global environment in which gains from cost-cutting may have bottomed out for many and new challengers focus on long-term growth and scale rather than near-term profits.[54]

- **Value creation matters more than size for its own sake.** The distribution of economic profit has become more skewed because firms have gotten much larger. But there are as many large firms in the bottom 10 percent of economic profit as there are in the top 10 percent. And the bottom 10 percent as a group destroys about as much value as the top 10 percent creates. Some such large firms have shown that it is possible to transform their performance and move from lower to higher deciles of value creation.

- **Sector and geography matter, but they can be overcome.** Superstar firms can come from almost any sector, but there are clear benefits to being in a growing or superstar sector. That implies that it is easier for firms to become superstars by concentrating on where the value is shifting in their value chain and in the wider economy—for instance, toward design and engineering services, financing, and internet- and software-based activities. Yet many firms have managed to thrive despite being in sectors that are seeing a decline in growth.

- **Productivity matters, but not by itself.** Superstar firms are 20 to 25 percent more productive with their labor and capital inputs versus median firms, even though median firms today are more productive than 20 years ago. Superstar firms that persist for 20-plus years have sustained productivity growth over this period. The fact that bottom decile firms in aggregate have higher productivity (revenue per employee) than the median firm, suggests that productivity is necessary but not sufficient.

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[53] Chris Bradley, Martin Hirt, and Sven Smit, *Strategy beyond the hockey stick*: *People, probabilities, and big moves to beat the odds,* Hoboken, NJ: John Wiley & Sons, 2018.

[54] *Playing to win: The new global competition for corporate profits*, McKinsey Global Institute, September 2015.

- **Bold investments in intangibles can lead to larger rewards.** Superstar firms spend two to three times more on R&D than peers and are more globalized and digitized than median firms. These gaps have grown in the past 20 years. All of these attributes are correlated to higher idiosyncratic risk among firms—and therefore to potentially higher returns as well.[55] Intellectual property and other intangible capital can give superstar firms better products and brands, increase customer switching costs, and allow temporary rents through patent protection.

- **Inorganic growth plays a role.** Superstar firms today rely more on M&A than peers or precursors.[56] As a share of total assets, superstar firms have 1.5 times more goodwill, and 1.5 to 2 times more acquired intangible assets, compared with median firms. Many bottom-decile firms share these characteristics, suggesting that these are higher-risk investments and firms cannot buy the superstar label by simply spending more on M&A. They also need to be better at selecting and integrating these assets to generate higher returns. Much of this comes from having more systematic and programmatic M&A.[57]

- **Winning the talent war matters.** In the escalating war for talent, superstar firms have an advantage and many are considered the best places to work by employees. Many superstar firms are in global tech, finance, and governance hubs, many of which are superstar cities, as well as in regional hubs that tend to attract talent. However, these cities see faster income growth than population growth, resulting in demand for high-skill, high-wage workers and limited supply, and fueling an escalating war for talent. All firms need to address the talent war and develop a strategy to compete, and this may include exploring other cities and hubs for talent.[58]

FOR POLICY MAKERS, SUPERSTAR DYNAMICS INFLUENCE QUESTIONS OF HOW BEST TO ACHIEVE BROAD, INCLUSIVE GROWTH AND PROSPERITY

The rise of superstar firms, sectors, and cities and their dynamics raise policy questions. Such questions range from the causes of superstars to their effects on competition and market structure; effects on their ecosystems and the rest of the economy, including other firms, sectors, and cities; and ultimately implications for growth, employment, and wages.[59] Our research is not conclusive or sufficiently complete to properly inform these questions. More research on these issues is needed to understand causes and effects, especially in a rapidly changing global and technology-enabled economy, in order to fully inform how policy makers should approach these issues. However, for now some preliminary considerations for policy makers, in terms of the economic effects, can be highlighted as follows:

- Economic gaps between superstar firms and others are reinforced by sectoral shifts that concentrate income and wealth gains in superstar cities. Superstar sectors' income gains are geographically concentrated, mostly in large cities, as are wealth gains in the form of imputed rents to homeowners. In contrast, in slower-growing sectors such as infrastructure and capital goods, the relative declines are felt across a wide geographic

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55 Peter M. Smid, J. Henk von Jie, and Matthijs Suurmeijer, "Research and development and firm risk," *Journal of Corporate Finance Research,* 2015, Volume 9, Number 3; Gonzague Vannoorenberghe, "Firm-level volatility and exports," *Journal of International Economics,* January 2012, Volume 86, Issue 1; Jacques Bughin, Laura LaBerge, and Annette Mellbye, "The case for digital reinvention," *McKinsey Quarterly,* February 2017; Mariana Mazzucato and Massimiliano Tancioni, "Innovation and idiosyncratic risk: An industry- and firm-level analysis," *Industrial and Corporate Change,* August 2008, Volume 17, Issue 4.

56 Jerayr Haleblian et al., "Taking stock of what we know about mergers and acquisitions: A review and research agenda," February 2009, *Journal of Management,* Volume 35.

57 Werner Rehm, Robert Uhlaner, and Andy West, "Taking a longer-term look at M&A value creation," McKinsey & Company, January 2012.

58 Ram Charan, Dominic Barton, and Dennis Carey, Talent Wins: The New Playbook for Putting People First, Harvard Business Review Press, 2018.

59 Diane Coyle, "Practical competition policy implications of digital platforms," Bennett Institute for public policy working paper number 01/2018, University of Cambridge, March 2018. William A. Galston and Clara Hendrickson, *A policy at peace with itself: Antitrust remedies for our concentrated, uncompetitive economy,* Brookings Institution, January 2018.

swath. These contrasts are multiplied several times over through indirect and induced effects on local economies. This raises questions about how policy could support greater integration of smaller cities and non-metropolitan areas and about how to address geographical consequences of sector shifts, including the impact on larger but non-superstar cities that may be left behind.

- Superstar firms and sectors today tend to be less capital-intensive than superstar firms and sectors of 20 years ago. This raises questions about whether capital-intensive firms and sectors will continue to see strong investment if returns are under pressure. If superstar effects are contributing to weak capital investment, that may raise concerns for productivity growth, since capital intensity is one of the challenges to productivity growth in advanced economies such as the United States and Europe.[60] What could this mean for productivity, jobs, and potentially wages in the future?

- Superstar firms and sectors see returns accruing to intangible capital and capital holders, and less so to labor. This tendency of increasing returns to intangible investments and declining returns to tangible investments and labor raises questions of equity in growth for smaller firms, which typically have lower levels of intangible capital, such as R&D and technology investments, but employ the majority of workers. It also raises concerns for less educated and more isolated segments of society, including within superstar cities. These questions become more urgent in light of rapid technological change, such as advances in automation and artificial intelligence applications, that may require a significant investment in human capital readiness to prepare workers for the future of work.[61]

- While the activities of multinational corporations—a group that includes many superstar firms—do have economy-wide benefits, the spillover effects cannot simply be assumed. Policy makers may need to consider how to maximize the potential benefits of superstar firms (such as managerial know-how, R&D investment, and digital capability) for smaller and midsize firms in the local economy and for the ability of developing countries to benefit from participation in global value chains. One example is the role that policy could play in ensuring that more domestic firms are able to use digital platforms to find foreign markets, thereby benefiting from the higher output growth, productivity, and wage levels of being an exporting firm.

7. QUESTIONS FOR FURTHER RESEARCH

While our research so far suggests the existence of superstars as we have defined them, it has also raised several categories of questions that require further research.

One area of further research is to investigate the causes of superstar effects, where the evidence so far remains inconclusive.[62] The literature on superstar firms suggests, for instance, that superstars may have faster productivity growth, more technological maturity or organizational strength, or greater intangible capital or M&A activity, or may benefit from a more tightly regulated product market. While our analysis has not yet been exhaustive on these factors, initially we find that none of these factors completely explains the phenomenon or the counterfactual evidence. Many superstar firms have seen declines in productivity, and many firms with substantial productivity growth are in the median

[60] *Solving the productivity puzzle: The role of demand and the promise of digitization,* McKinsey Global Institute, February 2018.

[61] *Jobs lost, jobs gained: Workforce transitions in a time of automation*, McKinsey Global Institute, December 2017.

[62] Chris Pike, *Market concentration,* OECD, June 2018.

or bottom 10 percent by economic profit. We find no difference in digital capability or organizational capacity between superstar firms and median performers, even though both factors correlate with revenue and EBITA growth and ultimately improve shareholder returns.[63] Superstar returns may be due to greater risk-taking through R&D or other activities that are correlated with higher firm-specific (or idiosyncratic) risk. Yet idiosyncratic risk has fallen by nearly half over the past 20 years, even as superstar returns have increased, and ever more R&D is concentrated in large superstar firms.[64] Is there one overarching factor at work that could be driving the creation of superstar firms or are there multiple factors? Could firm behavior be driving the trend, or are macroeconomic shifts the impetus? Why did the economic profit curve become more skewed after the mid-1990s, and why has it stayed that way even as competitive churn has not changed? Are superstar firms and zombie firms two sides of the same coin, both produced and sustained by the same macroeconomic conditions?

A related area of further research is the changing nature of competition itself. In previous MGI research, we identified three new sources of competition facing incumbents: the rise of hard-charging emerging-market competitors, particularly in capital-intensive sectors, many of which are state- or family-owned and prioritize scale over profits; technology and tech-enabled firms that have built powerful global, digital platforms and networks, with never-before-seen scale in users, customers, revenue, and profits; and thousands of small and medium-size enterprises gaining immediate global reach through digital platforms.[65] To what extent is the impact of these new competitive sources contributing to the creation of superstars?

Of further interest is research on linkages between superstar firms, sectors, and cities. In this paper, we suggest that there may be an emerging superstar ecosystem that is more globalized, more digitized, and more productive than the rest of the economy. Yet there are contradictions in this ecosystem observation as well. For instance, the highly traded manufacturing sector experiences declining shares of gross value added and gross operating surplus in both capital goods and consumer goods, yet superstar firms from these sectors are among the most globalized of all superstar firms. When it comes to digital intensity, some superstar sectors such as pharmaceuticals and real estate, and many superstar firms, are laggards.[66] And on regulation, some research suggests that political rents have influenced corporate profit growth since 2000, and major expansions in regulations increase profits significantly.[67] But many superstar sectors have relatively low regulation, yet are among the fastest-growing in terms of surplus, while other highly regulated sectors do not show up as superstars. Overall, could there be self-reinforcing aspects of superstars that create a superstar ecosystem?

Another area of research concerns the wider economic effects of superstars—specifically, is the superstar effect good or bad, on what basis or measure, and how can the good aspects be harnessed for wider benefit and the bad best addressed? Much of the economic literature and debate focuses on potential negative consequences for competition, prices, wages, investment, and productivity growth. These effects are not yet conclusive, and there is also little progress in fully assessing whether there are any benefits of superstar effects. For instance, is it better that a few large firms dominate R&D and bring innovations to market

63 Tanguy Catlin, Jay Scanlan, and Paul Willmott, "Raising your Digital Quotient," *McKinsey Quarterly*, June 2015; Chris Gagnon, Elizabeth John, and Rob Theunissen, "Organizational health: A fast track to performance improvement," *McKinsey Quarterly*, September 2017.

64 Sohnke M. Bartram, Gregory W. Brown, and Rene M. Stulz, *Why has idiosyncratic risk been historically low in recent years?,* NBER working paper number 24270, January 2018.

65 *Playing to win: The new global competition for corporate profits*, McKinsey Global Institute, September 2015.

66 *Digital America: A tale of the haves and have-mores,* McKinsey Global Institute, December 2015; *Digital Europe: Pushing the frontier, capturing the benefits*, McKinsey Global Institute, June 2016.

67 James Bessen, *Accounting for rising corporate profits: Intangibles or regulatory rents?* Boston University School of Law, Law and Economics working paper number 16-18, November 2016.

faster? If low-hanging innovations have been consumed, does new innovation require more, bigger, uncertain, and, in some cases, long-term investments—and if so, is that better done by superstar firms? What about considerations of consumer surplus? In addition, are there potential benefits to value and supply chains and to larger business ecosystems, especially considering the universe of $27 trillion of total economic activity that includes many SMEs, microbusinesses, and unincorporated enterprises, some that may participate in national or global markets created or enlarged by superstars? What happens to wage growth at superstar firms—is it higher, and is that because of a few superstar employees, or is it broad-based within the firm? With superstar cities, how can policy ensure agglomerative effects that raise productivity, attract talent, and spur innovation while ensuring that resulting gains are more widespread across more superstar cities?

A final area of research is the dynamics among non-superstars, especially those at the bottom that are as large at the superstars. In the case of firms it is the large value-destroying firms in the lower deciles; and in the case of cities, the large economically stagnant or declining cities that are getting left behind. What can be done to turn them around? What lessons are transferable from the success of superstars or from bottom decile performers that have been able to move up? In the case of cities, what role could placed policies play?

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The rise of superstars and the superstar effect is a growing topic for debate among business, policy, and economic leaders. Calls to action are hampered by varying definitions, inconclusive evidence, incomplete data and sometimes outmoded approaches in a changed global environment, and a lack of clarity on the causes, costs, and benefits of superstars. In this paper, we have attempted to address some of these gaps by using a definition centered on economic value and establishing where and to what extent a superstar effect can be observed among firms, sectors, and cities. The findings in this paper are by no means the last word on the topic, and indeed we have highlighted questions that require further research to inform smart policies by policy leaders and winning strategies by business leaders, all with the goal of not only value creation, but more inclusive growth and shared prosperity.

TECHNICAL APPENDIX

This technical appendix outlines our methodology for firms, sectors, and cities that forms the basis for this paper.

METHODOLOGY FOR FIRMS

Our analysis of firms relies on company-level financial data sourced from CPAnalytics, McKinsey's proprietary global data set that covers nearly 600,000 corporations including financial institutions, and includes both publicly listed and private firms. This data set provides longitudinal financial data that are adjusted to focus on operational performance and comparability across firms from different sectors and countries.

We apply a number of filters on this starting sample of 600,000 firms. The first filter is to consolidate wholly owned subsidiaries into their parent firms to ensure there is no double-counting of financial results. The second filter is to ensure there is sufficient data coverage to reliably estimate return on invested capital (ROIC), return on equity, economic profit, and weighted average cost of capital (WACC). The two filters together narrow the list to roughly 33,000 companies and their subsidiaries, which together span 89 industries, 210 sub-industries, and 133 countries of headquarters. A third filter is applied to focus only on firms with $1 billion or more in annual sales, resulting in 8,000 firms that account for $56 trillion of revenue in total, 62 percent of imputed global corporate revenue. A final check to adjust for complex cross-holding patterns and refine the parent-subsidiary linkages narrows the list further to 5,750 companies.

Superstar companies are identified based on their economic profit, a measure of a company's value creation. It is calculated as invested capital times the difference between ROIC and WACC. ROIC is calculated as net operating profit less adjusted taxes (NOPLAT) relative to total invested capital. We use NOPLAT because it focuses on operating profit and represents the profit available to both equity and debt holders (unlike net income, which measures profit after interest payments and is the profit available only to equity holders).

Invested capital including goodwill incorporates several assets, including (i) the book value of property, plant, and equipment net of depreciation, (ii) goodwill, the premium paid for acquisitions of other assets, (iii) net working capital, difference of operating current assets and liabilities, and (iv) other intangible assets, which include patents and other intellectual property, brand names, and customer contracts, which can be either internally developed or purchased. Our measure of invested capital excludes cash holdings and other short-term investments that are expected to be in excess of what's needed to run operations, estimated to be in excess of 2 percent of sales.

Goodwill is often excluded when analyzing an individual firm's performance. We include it in this paper, however, because we focus on large firms' long-term returns over a time period, and because M&A is an important part of large firms' growth and performance. The larger companies get, the more they use M&A to grow—with varying long-term returns depending on M&A deal size, frequency, industry, and overall M&A strategy of the acquiring firm.[68] Each firm's ROIC estimate thus includes goodwill and measures how well the company uses investors' funds, excluding its non-operating activities and capital structuring decisions, but including its acquisitions.

To ensure comparability between firms across sectors and countries, we also estimate the WACC for each firm. The cost of capital is the return expected by equity and debt investors in exchange for investing their funds in a company. A firm that provides a return in excess of its cost of capital is effectively adding economic value. WACC is calculated based on

[68] Werner Rehm, Robert Uhlaner, and Andy West, "Taking a longer-term look at M&A value creation," McKinsey & Company, January 2012.

a firm's capital structure (debt and equity relative to enterprise value), cost of equity, and after-tax cost of debt. The cost of equity for each firm is in turn based on the risk-free rate of return (based on government bond yields in the same currency as the company's cash flow, adjusted for inflation), a market-wide risk premium, and a firm-specific risk adjustment based on the firm's beta (the stock's co-movement with the market) measured by the capital asset pricing model. Stocks with high beta values must have returns that exceed the market risk premium to create economic value. The cost of debt is estimated based on a risk-free rate, a default spread determined by the company's bond rating and its physical collateral, and the company's marginal tax rate.

METHODOLOGY FOR SECTORS

We consider the private-sector economy of G-20 countries in this analysis, excluding sectors such as agriculture, public administration, and defense. Our purpose here is to identify economic activities that are becoming intrinsically more valuable over time, independent of the extent to which superstar firms participate in those activities. Understanding which activities are more valuable, and why, can also help test if such activities are indeed driving superstar returns within superstar firms.

We use sector labels that are generally consistent with ISIC 4 terminology; however, we ask readers to keep in mind that sector labels are supposed to indicate mutually consistent groupings of economic activity. For instance, the banking sector includes activities such as capital lending and credit intermediation, regardless of whether such activity is performed by an actual bank corporation, an industrial conglomerate, or an unincorporated business. Similarly, the machinery and equipment sector includes the activity of assembling heavy industrial goods; distribution and logistics the activities of storing, transporting, and wholesaling goods; and professional services the activities of corporate management, scientific research, design and engineering, and other legal, financial, and technical advisory activities.

The 24 sectors that we consider are grouped into seven sector groups based on shared attributes related to their use of inputs (Exhibit A1). The input measures we track are spending and investment on R&D inputs (firm-level ratios of R&D expenditure to sales); marketing inputs (firm-level ratios of selling, general, and administrative expenses to sales); skill inputs (sector-level ratios of workers with college degrees to total employment); digital inputs (sector-level measures of digital assets, usage, and labor); physical capital inputs (firm-level ratios of invested capital to sales, and total stock of property, plant, and equipment); and labor inputs (sector-level measures of share of private-sector employment).[69] When aggregating sectors into groups, we also consider the extent to which firms in these sectors share attributes such as overlapping economic cycles, similar business models, and linkages through supply chains.[70]

We use the term "superstar sector" as a matter of convenience, acknowledging that sectors are not superstars in the sense that firms can be. We identify superstar sectors based on their growing share of income over the past 20 years in the G-20 group of large economies. Two income metrics are used: gross value added, a measure of gross output less inputs from other sectors and imports, and gross operating surplus, a measure of gross value added less employee compensation and taxes on production and imports. Superstar sectors satisfy three conditions across both income metrics: (i) they see the largest gains in income share relative to other sectors, indicating that these activities generate a larger share of economic returns; (ii) the gains are significantly larger relative to their starting share than for other gaining sectors, indicating that these activities see rapid growth in economic

[69] *Digital America: A tale of the haves and have-mores*, McKinsey Global Institute, December 2015; *Digital Europe: Pushing the frontier, capturing the benefits*, McKinsey Global Institute, June 2016.

[70] *Playing to win: The new global competition for corporate profits*, McKinsey Global Institute, September 2015.

returns; and (iii) the gains are seen in a majority of the G-20 economies, indicating that these returns are not limited to one or two countries but are broad-based. Based on these three metrics, a handful of sectors emerge as superstars among the 24 sectors that make up the private economy.

METHODOLOGY FOR CITIES

We start with MGI's CityScope database of the world's 3,000 largest metropolitan areas as measured by GDP.[71] Using this data set, we track changes in these cities' income, population, and household trends over the 2007–15 period. This data set, the largest of its kind, brings together publicly available data from various sources such as the OECD Metropolitan Areas Database and the United States Bureau of Economic Analysis's regional economic accounts. The definition of a city in this data set is primarily the metropolitan statistical area as defined by these data sources.

We identify superstar cities based on the current and historical evolution of two income measures. One measure is the GDP per capita of a city relative to its urban peers in the same economic region. A region can be a single country (as in the case of China) or a group of countries (such as Western Europe) that are similarly designated by the World Bank's classification of countries according to their income. We identify cities with a GDP per capita that is greater than 1.00 relative to their regional peers. The second measure is the share of global GDP represented by the city, adjusting for purchasing power parity; we identify cities with at least $250 billion in PPP-adjusted GDP. We filter the selected cities for their size (as a measure of global economic relevance) by focusing on cities that account for 0.3 percent or more of PPP-adjusted world urban GDP. In 2007, 46 cities made the cut; in 2015, 48 did. We rank-order the remaining cities by GDP per capita relative to their region- and income-based peer group, and select two to four top-ranked cities to round out the list of 50.

Superstar cities satisfy two conditions across these metrics: (i) they meet both income criteria today, and (ii) they have increased their contribution in either or both of the criteria over the past decade. We use the "either-or" approach to ensure that we do not penalize cities that have seen a marginal decline in GDP per capita because of strong population growth.

[71] *Urban world: The shifting global landscape*, McKinsey Global Institute, October 2013.

Exhibit A1

The sectors we analyze can be categorized into seven sector groups based on shared attributes.

CAPITAL GOODS **Design and production of goods for mainly commercial and industrial use**	▪ **Automobiles and parts:** Manufacture of motor vehicles and components ▪ **Fabricated components:** Fabrication of metal, rubber, plastic, and mineral products (except those in automobiles) ▪ **Industrial chemicals:** Production of basic and commodity chemicals mainly for industrial use ▪ **Machinery and equipment:** Manufacture of agricultural, industrial, construction, and transportation equipment
CONSUMER GOODS **Design and production of goods for mainly individual and household use**	▪ **Apparel and luxury goods:** Manufacture of textiles, clothing, and related consumer accessories ▪ **Consumer packaged goods:** Manufacture of specialty chemical products mainly for household use ▪ **Food, beverage, and tobacco products:** Processing of agricultural, fishing, and forestry products for consumption ▪ **Pharmaceuticals and medical products:** Manufacture of medicinal and therapeutic drugs and devices
INFORMATION TECHNOLOGY **Design, development, and distribution of digital goods and services**	▪ **Computers and electronics:** Manufacture of computer, electronic, and optical products such as consumer electronics ▪ **Internet, media, and software:** Development and distribution of media and internet content and software programs
FINANCIAL SERVICES **Delivery of services related to credit, insurance, and financial investments**	▪ **Asset management:** Services related to portfolio and fund management and investment research ▪ **Banking:** Services such as deposit collection, lending, and other forms of credit intermediation ▪ **Insurance:** Provisioning and management of health, life, and other insurance and reinsurance policies ▪ **Real estate:** Activities related to owned or leased property, including imputed rents to homeowners
BUSINESS SERVICES **Provisioning and delivery of mainly business-to-business (B2B) goods and services**	▪ **Construction:** Construction of buildings and infrastructure, and related engineering activities ▪ **Distribution and logistics:** Services related to wholesale procurement and trade, storage, and freight forwarding ▪ **Professional services:** Accounting, legal, management, scientific, technical, and other skilled services
CONSUMER SERVICES **Provisioning and delivery of goods and services for individual and household consumption**	▪ **Healthcare:** Delivery of health services in hospitals, physician offices, nursing homes, and other facilities ▪ **Hospitality:** Services related to leisure activity, accommodation, and food and beverage services ▪ **Retail:** Resale of goods mainly to the public for general and household consumption
INFRASTRUCTURE **Development and operation of energy, transportation, and communication networks**	▪ **Natural resource processing:** Extraction and refining of oil, gas, metal, and other natural resources ▪ **Telecommunications:** Provisioning and operation of voice, data, and other communications networks ▪ **Transportation:** Operation of ground, sea, and air passenger and freight transportation networks ▪ **Utilities:** Operation of electricity, gas, water, and other distribution networks

SOURCE: Standard Industrial Classification of All Economic Activities, revision 4, United Nations Department of Economic and Social Affairs, Statistics Division, 2008; McKinsey Global Institute analysis

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